Enhancing Creative Thinking and Reducing Examination Malpractice in Secondary School System through Open Book Examination (OBE) Method

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Abstract

This study focus is to introduce Open Book examination (OBE) method in secondary schools. Four research questions and two null hypotheses guided this study which borders on instrumentation through experimental design and employed descriptive survey design. The population of this study was all the SS2 chemistry students in Owerri-west. 126 students were randomly selected and used as sample. The instrument used for data collection was 10 essay questions from (2012-2015) WAEC chemistry questions for Close Book Exam (CBE), 10 essay questions constructed by the researchers for (OBE) and a 12 item rating scale titled Open Book Examination Rating Scale (OBERS). Data generated were analyzed using mean scores and coefficient of correlation. It was found among others that the rate of malpractice was reduced using OBE, there is a significant difference in the performance of the students on, and poor correlation between the two exam. Recommendations include that Open Book Exam should be welcomed in our Nigerian schools to check malpractice and promote creative thinking.
One of the major concerns of Nigeria as a developing country is that there is a mismatch between graduates’ skills acquired from both secondary and tertiary institutions and the skill sets needed by the employers. Many of the current graduates of secondary and tertiary institutions are found to be lacking in creativity, analytical and critical thinking, and problem-solving skills which are the important skills required for wealth creation in this present economic dispensation. In other words they lack quality and could be termed half baked. Quality as a concept could be seen as measuring up to expectation. Our quality of graduates shows our quality of education. To maintain quality, control measures must be vigorously pursued and implemented at all stages of the examination process (pre-examination and post-examination) especially for the examination bodies. According to Nwokenne, Ukozor and Offor (2015) before anything is branded “Quality” it means that it has been tested and trusted. If our assessment and evaluation methods have been tested and trusted in line with the purposes they should serve, then the problem of half-baked graduates, examination malpractice and other unexpected issues about our educational output should not be heard.

Presently, many instructions are moving towards problem-based learning as a solution to producing graduates who are creative, can think critically, analytically and solve problems. Since knowledge is no longer an end but a means to creating better problem solvers to and encourage lifelong learning, problem-base learning is becoming increasingly popular in educational institutions as a tool to address the inadequacies of traditional teaching (Amadi and Ezechukwu, 2015). Likewise, the inadequacies in assessment methods need to be addressed by the introduction of Open-Book Examination (OBE) method. Anastasi and Urbaina (2007), pointed out that advocates of educational reforms believe that a major overhaul is needed in curricular goals and instructional methods as well as in tools of assessment, and they perceive all of these areas as inextricably tied. Thinking also in this direction, Nwana (2007) commented that open-book test and other assessment methods like quizzes, take home questions, group assignment etc which are neglected by most teachers should be adopted. He saw them as innovative in the sense that few teachers have ever used them. They have been advocated by educators over the years but only regarded as “optional variants to testing knowledge”. Open-book test, the researcher knew is only tried out by few teachers in tertiary institution and not at all used in secondary schools.

An adage says “variety brings joy”, hence the need for adoption of the open-book examination as a welcome method of assessment in secondary schools. One may ask, what is this Open-book examination method (OBE)? OBE is a method of assessment, whereby the examinee is allowed to come into the examination hall with textbooks, notebooks, handouts, journals and any material he feels will help him in answering the given questions or items. An open book examination is defined by Mohanan (2007) as one in which examinees are allowed to consult their class notes,
textbooks, and other approved materials while answering questions. He added that
tough radical and puzzling as the idea may sound to those who are used to conventional
examinations; it is ideally suited to teaching programs that especially aim at developing
the skills of critical and creative thinking. According to WWW.Merian-Webster.com/...
in Nwokenne and Amadi (2016) open book examination is “a written examination
during which an examinee is permitted to consult references to answer questions calling
for organization, analysis or judgment rather than memorization”.

Open book examination according to Williams and Wong (2007) makes the
students tend to work more creatively, making them to use materials in critical thinking,
analyze, synthesize and probe deeper than the close book students. Loi and Joe (2006),
see a closed book examination as the most common method of students assessment used
in all levels of education which can be easily used to test students’ abilities of strong
recall, reproduction and understanding as well as knowledge; if well designed can also
be used to test a students’ ability to think and apply knowledge. In this mode of
assessment, students are not allowed to bring in materials into the examination
room. (https://student.Univ.edu.au/2015) has this to say “open-book examination allows
you to take notes, texts or resource materials into an exam situation… they test your
ability to find and apply information and knowledge”. During OBE, your text books and
resource materials should serve as reference tools that are used in addition to existing
knowledge and understanding, not in place of it. The materials are applied to situation
added: Open book examination test is far more than just rote learning,… it tests your
ability to quickly find relevant information and then to understand, analyze, apply
knowledge and think critically.

Looking at these definitions and features of the open book examination, one can
see that the questions to be administered on the examinee are applied which require
higher cognitive levels. The questions should be technically worded with the objectives
and contents of the subject retained, it does not require list, name, outline, what is? etc,
rather questions that require higher cognitive levels.
Alcott (2011) remarked that in OBE, the examinee will be expected to,
− Apply material to new situations.
− Analyze elements and relationships.
− Synthesize or structure.
− Evaluate using your material as evidence.
(i.e the higher cognitive levels according to Bloom’s taxonomy)
Open book examination can take different forms.
https://student.univ.ed.au/(2015) noted two forms in which open book examination can
come up.
– Traditional sit down/Limited time exams with varying degrees of access to resource and references.
– Take home exams. Questions are handed out, answer are attempted at home without help from others and the exam is returned within a specified period of time (often the next day). In addition to these two forms, http://arectl.Lku.h.k: (2014) added;
– Questions are given to students prior to the exam and they can utilize their prepared resources in the exams.

Having seen the structure and methods of OBE, one may think that it is very easy and does not need much preparation. Contrary to this view, Amos (2011) advised “don’t underestimate the preparation needed for an open book examination… your time will be limited; so the key is proper organization in order to quickly find data, quotes, examples and or arguments you use in your answer’s. Althonse (2012) in her own words added “OBE is preferred by the students, does not seem to decrease learning and retention and decrease students who may spend much time looking for which part of the book to find answers to the questions instead of applying the knowledge, reasoning ability and skills needed. Adequate preparation makes the difference as it will make reference materials as user-friendly as possible so that he does not lose time locating what is needed and at the same time, hit the nail at the head.

Open Book Examination (OBE) Rules/Features
a. Time allotted to exam is usually less than time for traditional closed book examination.
b. Every examinee seats alone, only to interact with his resource materials.
c. No conversation of any sort, no borrowing and interaction while in the examination hall.
d. No questions from/to anybody.

Statement of Problems
Quality education is an effective means of fighting poverty, building democracy and fostering peaceful society. It empowers individuals, opens pathways to self-actualization and broadens perspectives to open minds to a pluralist’s world. Poverty as it were, is not only lack of money and material for comfort in life but lack of ideas (mind poverty) and other capabilities to generate income for wealth creation and life empowerment. Through critical thinking poverty can be reduced. If our education system should continue in examination malpractice which is one of the problems in close book examination, there will be no room for critical, positive and divergent thinking.

Poverty reduction strategies instituted by various agencies, government and non-governmental have not been yielding the desired result simply because mind-poverty


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(lack of ideas), the first son of examination malpractice which is the underpinning factor to reduce poverty has not been addressed. The traditional Close Book Examination (CBE) method has made the examinee hatch many strategies and innovations in the area of examination malpractice. These have in no small measures helped in bringing down the standard and at the same time expose our output (graduates) as “half baked” because they cannot prove their mettle in the labour field since the end justifies the means. All these made the researcher think towards welcoming the open book examination as an assessment method that will help to improve critical thinking, minimize exam malpractice and in prove the quality of our graduates.

Purpose of the Study
The major purpose of this study was the introduction of Open Book Examination (OBE) as a method of assessment to encourage creative/critical thinking in secondary school students. Specifically, the study aimed at finding out:
  • if students will prefer this OBE method to Closed Book Examination (CBE) method.
  • if examination malpractices could be reduced drastically or eliminated using OBE.
  • if OBE will increase the creative ability of students
  • if students perform better when assessed using OBE method.

Research Questions
1. To what extent do students prefer OBE to other methods of examination?
2. To what extent can open book examination reduce examination malpractice?
3. What is the difference between the students mean scores in OBE and that of CBE?
4. What is the coefficient of correlation between the mean scores of OBE and CBE?

Hypotheses
The following null hypothesis were posed and tested at 0.05 level of significance
1. There is no significant difference between the mean score of students on OBE and CBE.
2. The coefficient of correlation between OBE and CBE is not statistically significant.
Method

The study borders on instrumentation through quasi experimental design involving simple group post-test design and employed descriptive survey design. The population of this study was all the SS2 chemistry students in secondary schools in Owerri-west L.G.A that is 858 students. Two schools from this L.G.A, Ndegwu Secondary School and Irete Secondary Technical School were randomly selected with their 126 Chemistry students used as sample for the research. The instrument used for data collection was a 10 essay Chemistry questions from (2012-2015) WAEC Questions papers on selected topics (Periodic table, Carbon and its Oxide, Rates of chemical reaction, Redox reaction and Electrolysis) from SS2 curriculum that have been taught to the students, Tagged form I exam for CBE, another 10 essay questions from the same questions in form I reframed critically by the researcher tagged form II exam for OBE and a 12 item Likert four rating scale titled Open Book Examination Rating Scale (OBERS).

Form II exam questions was validated by 2 experts in chemistry and 2 experts in measurement and evaluation, which with the use of kuder Richardson 21, the reliability coefficient gave index of 0.86 for the instrument. The form I exam was administered on the students, 2 weeks, later, the form II was administered on the same group under thorough supervision after which the OBERS were given to them to fill. The scores of the two exams were obtained, analyzed and interpreted.

Responses from the OBERS were used to answer research question 1 and 2 whose means were used to compare the criterion mean.

Rule: The acceptable mean is for the 4point rating scales is 2.5, i.e.

$$\frac{1 + 2 + 3 + 4}{4} = \frac{10}{4} = 2.5$$

Therefore, mean scores from 2.5 and above indicated agreement of, while mean scores below 2.5 indicated disagreement of the item in the rating scale.
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#### Result

### Table I: Students Perception from OBERS

<table>
<thead>
<tr>
<th>S/N</th>
<th>Items</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>X</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OBE is preferred to other method of exam (CBE)</td>
<td>94(376)</td>
<td>24(72)</td>
<td>6 (12)</td>
<td>2 (2)</td>
<td>3.11</td>
<td>Agree</td>
</tr>
<tr>
<td>2</td>
<td>Students also cheat using OBE</td>
<td>10(40)</td>
<td>12(36)</td>
<td>33(66)</td>
<td>71(71)</td>
<td>1.69</td>
<td>Disagree</td>
</tr>
<tr>
<td>3</td>
<td>The exam hall is always noisy using OBE</td>
<td>16(64)</td>
<td>14(42)</td>
<td>36(72)</td>
<td>60(60)</td>
<td>1.89</td>
<td>Disagree</td>
</tr>
<tr>
<td>4</td>
<td>OBE minimizes different forms of exam malpractices</td>
<td>82(38)</td>
<td>18(54)</td>
<td>17(34)</td>
<td>9(9)</td>
<td>3.37</td>
<td>Agree</td>
</tr>
<tr>
<td>5</td>
<td>OBE questions are cheaper than CBE</td>
<td>_</td>
<td>12(36)</td>
<td>54(108)</td>
<td>60(60)</td>
<td>1.62</td>
<td>Disagree</td>
</tr>
<tr>
<td>6</td>
<td>OBE reduces exam phobia among students</td>
<td>53(212)</td>
<td>24(72)</td>
<td>22(44)</td>
<td>27(27)</td>
<td>2.82</td>
<td>Agree</td>
</tr>
<tr>
<td>7</td>
<td>OBE do not allow copying from one another in exam hall</td>
<td>62(248)</td>
<td>34(102)</td>
<td>16(32)</td>
<td>14(14)</td>
<td>3.14</td>
<td>Agree</td>
</tr>
<tr>
<td>8</td>
<td>OBE questions are always applied questions that require critical thinking and understanding</td>
<td>74(296)</td>
<td>48(144)</td>
<td>2(4)</td>
<td>2(2)</td>
<td>3.54</td>
<td>Agree</td>
</tr>
<tr>
<td>9</td>
<td>Students need to read wide and get more focused for them to perform well in OBE</td>
<td>58(232)</td>
<td>56(168)</td>
<td>8(16)</td>
<td>4(4)</td>
<td>3.33</td>
<td>Agree</td>
</tr>
<tr>
<td>10</td>
<td>OBE do not encourage much preparation since resource materials are allowed and therefore make unserious students to benefit more.</td>
<td>_</td>
<td>4(12)</td>
<td>64(128)</td>
<td>58(58)</td>
<td>1.57</td>
<td>Disagree</td>
</tr>
<tr>
<td>11</td>
<td>OBE is preferred to other methods of exam because it will make me to read wide and think critically</td>
<td>74(296)</td>
<td>48(144)</td>
<td>2(4)</td>
<td>2(2)</td>
<td>3.54</td>
<td>Agree</td>
</tr>
<tr>
<td>12</td>
<td>OBE is preferred to other methods of exam because I can copy my answer from the text book and other materials.</td>
<td>_</td>
<td>5(15)</td>
<td>63(126)</td>
<td>58(58)</td>
<td>1.58</td>
<td>Disagree</td>
</tr>
</tbody>
</table>

**Grand Mean**: 2.60

**N=126.**

In response to RQ1 in the first item of OBERS the mean score of students who prefer OBE method is greater than the acceptable mean of 2.50. This implies that the majority of the students do prefer OBE method. Likewise using item eleven (11) with mean score of 3.54, majority of the students prefer OBE method because it will make them read wide and think critically.

In response to RQ2, items 2, 4 and 7 reveals that in OBE students don’t cheat, different forms of malpractice is minimized and it does not allow students to copy from
one another. So with all these information, the reduction of exam malpractice is in the increase.

The differences in mean scores of students in the two exam scores were obtained by finding the mean score of students in each exam form and subtracting form II from that of form I to answer RQ3. The coefficient of correlation was calculated using PPMCC raw score approach which answer RQ4. The hypotheses; HO, was tested using the t-test statistics for matched samples means while HO₂ was tested with t-test of significant of Pearson r.

Table 2: Analysis of Result Concerning Research Questions 3 and 4.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean score</th>
<th>Mean diff</th>
<th>Std dev</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OBE</td>
<td>40.50</td>
<td>29.50</td>
<td>9.20</td>
<td>0.21</td>
</tr>
</tbody>
</table>

A close look at both means on table 2 with mean difference of 29.50 shows that students perform better in CBE than the OBE irrespective of the fact that OBE was developed from CBE. Only 20% (25 students) out of 126 students were able to score 50% and above, others performed poorly. The value of coefficient of correlation shows that the scores of the students on the two test format are at variance with the value of r xy =0.21 which shows poor correlation. By squaring the value of r xy and multiplying by 100, gives the percentage coefficient of variation to be 4%, meaning that only four percent relationship exists between the two test formats

Table 3: Summary of Result Concerning Test of Hypotheses 1 and 2

<table>
<thead>
<tr>
<th>HO:</th>
<th>t-cal</th>
<th>t-tab</th>
<th>Df</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10.28</td>
<td>2.262</td>
<td>9</td>
<td>Rejected</td>
</tr>
<tr>
<td>2</td>
<td>1.89</td>
<td>2.306</td>
<td>8</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

In table 3, the test of hypothesis 1 with t-cal of 10.28 and t-tab of 2.262 made it clear that no significant difference exists between the mean scores of CBE and OBE and the null hypothesis one rejected. The test of coefficient of correlation as shown in the table 3 with t-cal of 1.89 and t-tab of 2.306 proved that CBE and OBE are not statistically significant (p<0.05), hence the null hypothesis two is accepted since there was very poor correlation. In other words the two exams are not one and the same.
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Conclusion

Open book exams and closed book exams are not the same both in nature and way of administration. The nature and way OBE is administered to students will help more in motivating the students to prepare well for the exam and as well reduce and discourage any intention of applying malpractice in their exams. OBE therefore, is an assessment procedure/mode that delivers the superior learning outcome both in cognitive and affective areas. The researcher believe with time, when the students must have been used to OBE, their scores in it will increase as their thinking increases as well.

Recommendations

On the above summarized findings and the entire work, the following are the proffered recommendation as a way forward for the study.
1. The open book mode of exam should be extended to all subjects in secondary schools to enhance creative thinking in the students and discourage malpractices.
2. Mid-term open book tests should be organized in all subjects before the end of term examination to sensitize students on the areas of need in the learning process of their subjects to enhance their performance and skill in those subjects.
3. SEMB/Head of schools should embark on training programs for teachers and students on how to use the open book format/mode for examinations
4. Students should be exposed for preparation requirements for the exam mode.

References


Dr. Victoria Chinyere Amadi and Dr. Nnenna Odochi Nwokenne


School-leaving examinations may be taken in an adapted form, for instance if the candidate is disabled or dyslexic, or living with a chronic condition, or if their first language is not Dutch. Pupils from other language backgrounds. Special arrangements may be made for pupils whose first language is not Dutch and who have attended a Dutch school for no more than six years (including the school-leaving exam year). The school may allow candidates in this category to: have up to 30 minutes™ extra time for the national examination; use a Dutch monolingual dictionary; use a bilingual dictionary (fr The numerous examination malpractice among secondary school students in Mushin Local Government over the years have become a growing concern since cheating is such a longstanding and global problem inherent by human beings. Effort should therefore be directed towards controlling cheating behaviours and also finding the possible causes of the problem among secondary school students in Mushin Local Government.Â Examination malpractice is a kind of conduct that violates the acceptable laid down rules and regulations of Nigeria™s education system.Â - Publication as eBook and book - High royalties for the sales - Completely free - with ISBN - It only takes five minutes - Every paper finds readers. Upload your paper. Publish now - it's free.