

# THE OPEN BOOK EXAMINATION

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## ABSTRACT

The purpose of this study is to identify student's perception about the effectiveness of the open book examination and their achievement in such exam as compared to close book examination. Using stratified sampling, 995 students with experience in open book examinations at Kolej Universiti Teknologi Tun Hussein Onn (KUiTTHO) were chosen as respondents. The instrument was a set of questionnaire. The instrument included questions of this study is a set of open book examination and close book examination and the students' marks for both examinations. SPSS statistical software was used to record the data and several analyses was done, using descriptive and inferential statistics methods such as mean, standard deviation and T-test based on objectives and hypotheses that had been determined. The results show that the students have positive reaction towards open book examination. The results also show that through open book examination students' achievement was better compared to close book examination.

## 1. INTRODUCTION

The year our country is supposed to achieve her status of a developed industrialize nation is just around the corner. As such, our nation should have started a whole new plan in preparing the nation-self towards challenges in the year 2020. And Malaysia, still sustaining its vision of becoming a developed country by the year 2020. One of the challenges is:

*"To produce a scientific and progressive society, having a high degree of ability to change and foresee the future, one which does not only become a consumer of consumer but also a contributor to the future of scientific and, technological civilization"*

However, do we have necessary ingredients to produce Malaysians who are of high quality? How do we rate a nation's quality? One of the criteria is having citizens with high quality in 4 aspects, which are physical, emotion, soul, and intellectual, that parallel our national education philosophy. The hard work of trying to develop a nation with qualified citizens seems to have a strong relation with the educational system of our country. Malaysian education system is divided into three levels, which are primary school, secondary school and institution of higher education. This requires an effective mechanism that can guarantee the effectiveness of the evaluation system in our country's education system. However, can

the existing evaluation (examination) system afford to act as the mechanism towards enhancing our nation to produce a community of elite citizens?

## 2. OPEN BOOK EXAMINATION

Open book examination is an approach to combine the traditional way of examination and course works. Through open book examination, interpretative concentration will be acted through data manipulation, strategy comparison, technical design and information analysis (<http://www-it.fmi.uni-sofia.bg/~iliana/TDO/FLASSESZMETD32W3.HTM>).K.P.

Monahan (1997) recommended two operations of the open book examination. First, students are allowed to bring the books or references into the examination hall during open book examinations that are approved by their lecturers. Second, students are also allowed to bring their books that they wanted for references in the examination hall such as reference books, articles, class notes and their study notes. Extended explanations on open book exam:

- i. It is a simulation of the daily situation in one's career whereby we have to prepare reports, writing memos and overcome problems.
- ii. In this test, weak students with very weak basic skills would spend a lot of time to understand the basic concept of solving certain problems before referring to the reference. (<http://www.hcc.hawaii.edu/intranet/comitees/FacDevCom/guidebk/teachtip/quizzes.htm>).

According to Theophilides and Dionysiou (1996 cited from Loi Soh Lai and Wu Yuan, 2001):

*"Referring to this type of examination Tussing posited as early as 1951 that the open book examination removes much of the fear and emotional block encountered by students during examination, while, at the same time, it emphasizes practical problems and reasoning rather than recall of facts".*

Open book exam can be implemented using two methods: take-home exam or in campus. During the exam students are allowed to use textbooks or class notes. This type of exam is more difficult to implement rather than close-book exam because open-book exam aims to measure student's ability to reorganize and reuse the information but not just testing their understanding upon study materials.

On the other hand, in open-book exam lecturers will be stricter on marking the answers because students have been given the opportunity to refer. Furthermore, in open-book exam, it does not mean that students are not encouraged to do revision or even study since they can refer to their book in open-book exam, students are not going to copy everything in the book or references but it will test their skills to reuse and adapt the concepts from the materials. (<http://www.hcc.hawaii.edu/intranet/comitees/FacDevCom/guidebk/teachtip/quizzes.htm>).

Thus, based on the given information, it can be concluded under a clear consensus that open-book exam is a suitable approach to be implemented on the general subject of the university curricular studies. The rationale is the university general subjects such as Politics and Malaysia Nationhood will likely be as the SPM History paper. In the typical exam method students have to memorize everything and then they have to write it on the exam

paper. On the contrary, the open-book exam is more applicable to be implemented since it uses reorganization and adaptation of the materials.

According to Feller (1994 cited from Loi Soh Lai and Wu Yuan 2001), examination without referring to books will only test student's ability on certain memory. In contrast, open-book exam is the highest evaluation level involving conceptual test, solving problems and almost perfect on giving students the exposure of real world situation. Ahmad Esa and Khairul Azman Suhaimy (2001) have conducted an opinion survey on 210 male and female students of Politics and Malaysia Nationhood subject in ITTHO and found that the respondents gave positive feedback. They agree that through open-book exam, objectives of the course can be achieved even though they admitted that the method is quite challenging as compared to typical examination.

Loi Soh Lai and Wu Yuan (2001), who have conducted a study on the first year students of Business Statistic course from Accounting and Business School, Nanyang University Of Technology, Singapore, found that more than 60% of 583 respondents were more prepared to sit for the open-book exam than close-book exam. There were no differences in respondent's perception upon the statement that open-book exam can reduce pressure and prepare the logical thinking skills.

### **3. STATEMENT OF PROBLEMS**

Examinations have always been the measurement for individual success and how one has mastered particular discipline. Ee Ah Meng (1990) and Omardin Asaari (1996) agree that examination or potential test is to measure the talent, level of success and the ability to think using the knowledge in their level of studies based on the present co-curriculum. Among the purposes of examination is to detect the level of achievement of the student in order to fulfill the Taxonomy level. Bloom's Taxonomy (1956 cited from M. Najib Ghafar 1997) is about knowledge, understanding, application, synthesis and assessment. Furthermore, those students who get flying colours in their examination are those who are knowledgeable in knowing how to apply the knowledge, creative in thinking and critical in terms of relating the knowledge and the obstacles in working and daily life.

This statement leads to variety of questions regarding the meaning of excellence among academicians. Among them are Robiah Sidin (1994) and Mohd Najib Ghafar (1997) where they pointed out that examination is a limited measurement towards the recognition of student's excellence and factors such as environment and health. These factors may be the reasons why students fail to succeed in the examinations. For instance, if a student is having problem with his health, he cannot perform well in his examination. Nordin Kardi (Utusan Malaysia, 2001) stated that the achievement of Malay students is more excellent than Non-Malay students in outdoor assignments compared to memorizing tasks. It is unfair if we do not give the various chances in examination management because examination has always been the symbol of excellence. In this context, the researcher as well as other friends who are lecturers took the initiative to run the open book examination in higher learning institution.

In the usual exam, students have to memorize the facts, especially in the context of General Study. Failure to memorize will result in students becoming unsuccessful in examinations. The question is, are students who really memorize everything considered good students? Are the students who cannot memorize considered bad students? How can we test their

skills in thinking, assessment and application of the knowledge if they fail to memorize their lessons? A research done by Mohd Najib Abd Ghafar (1999) on 112 students in a Science Cognitive Test shows that students prefer to answer the questions based on their memory instead of thinking.

If this is the product of higher learning institutions then Malaysia's needs to produce a knowledgeable and competent human resource will not be achieved. He suggested the instructor to assess the students without encouraging them to memorize totally and that the misconceived perception of a teaching as being a process of giving facts and information as well as of memorizing facts should be changed. Robiah Sidin (1994) also said that self-test students who have the ability to search for information are excellent students. In this context the open book examination is relevant. This is because, when students refer to the book, they are assessed on their ability to find information and not on the ability to memorize everything. Mohanan K.P (1997) stated that through open book examinations, students would be able to test their ability in applying knowledge, assessment of the knowledge and creative knowledge.

At the national level, ex-Chief Director of Education, Tan Sri Dr. Wan Mohd. Zahid Mohd Nordin in Sooraj Nair (1996) predicted the implementation of open book system at primary and secondary school level in the year 2000. According to him, this kind of examination can detect the intellectual ability of those students who cannot memorize the facts. Through this system, the particular student should use his mind and in this system, the particular student should use his mind and in this situation is suitable to stimulate thinking skill compared to memorizing facts (<http://st-www.cs.uiuc.edu/~chai/berita/960830-960930/0213.html>). At international level, there are several universities using this method such as Wyoming University and Hong Kong Open University. Even in California, there are a lot of colleges, which have the Exam Unit that operate the Open Book Examination, (<http://www.cchs.edu/testing/unitexms.htm>). For the Asean level, this method is being used at Nanyang Technology University, Singapore.

Since there are several views on the advantages of open book examination as compared to traditional means and that they have been implemented at overseas university level, it is essential to conduct a research to get the students' perceptions. From the study we hope to be able to find answers to among others, students' acceptance of such examination and does the exam really test their thinking ability as claimed by some academicians? Does this kind of examination prove the success of the students in mastering what they learnt? Answers to these questions should be found immediately in order to make open examination an alternative in general studies courses at tertiary level. Ee Ah Meng (1990) stressed that among the matters which frequently form issues is not as to whether the examination should be abolished or not instead on how it should be implemented.

#### **4. RESEARCH OBJECTIVES**

The objectives of this research are:

- i. To determine student's perception toward the acceptance of open book examination.
- ii. To determine student's perception toward the idea of open book examination capability to enhance thinking skill.
- iii. To determine student's perception toward the adequacy of open book examination to fulfill course evaluation.
- iv. To determine student's perception toward the adequacy of open book examination to fulfill course objective.
- iv. To determine the effectiveness of open book examination as compared to conventional examination.

#### **5. RESEARCH HYPOTHESES**

The research hypothesis is there is no significant difference in student's grade achievement in both types of examinations.

#### **6. RESEARCH SCOPE**

The scopes of the study are as follow:

- i. Research was focused on students undergoing Common Subject course and already have experience in open book test in KUiTTTHO.
- ii. Student's perception toward open book examination was only focused on three courses offered by Social Science Unit and Islamic Study Unit.
- iii. Student's perception was only focused on acceptance of implementation method, suitability to thinking skill, suitability to course evaluation, suitability to course objective and problems encountered in open book examination context.
- iv. The effectiveness of open book examination method were only imposed on a group of students.

Common Subject courses were chosen as research's scope on the basis of its importance toward building one's competence and specific skill to university level students. Courses with historical background can cast students' character to love their country and will be prevalent to future action, as quoted by our Prime Minister in his 2000 New Year message.

*"Those who ignore history are destined to repeat it"*

The irony of the situation shows that some University level students view Common Subject courses as irrelevant and boring, as they have to memorize lots of facts. Abd Latif Samian (2000) quoted that there are three groups with different reactions toward Common Study; ignore, eager to know and agree.

## 7. RESEARCH METHOD

The study sample consist students who are taking the General Study subject. These students already had the experience in the examination by referring to books at KUiTTHO in the second semester of on 2000/2001. They comprise bachelor degree and diploma students who are studying Civil, Electrical or Mechanical Engineering and had taken the open book examination in three subjects, offered by Social Science and Islamic Education Units. A total of 1,108 students were involved in the research (Social Science Unit record). From the research population, a sample of 995 students was taken whereby the percentage of confidence was set at 99% as proposed by (Krejcie and Morgan, 1970).

A stratified sampling method was adopted used. This was to ensure that each population in the research was represented. This method is considered more flexible because the researchers are free to select the sample, in aspects of knowledge towards population, factors in population and purposes of research (Babbie, 1973).

**Table 1: Total number of samples according to stratification of General Study courses, study level and programmed pursued.**

<b>Courses Level of study/Programs</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>Total</b>
<b>Diploma in Electrical Engineering</b>	<b>16</b>	<b>39</b>	<b>28</b>	<b>83</b>
<b>Diploma in Civil Engineering</b>	<b>18</b>	<b>45</b>	<b>33</b>	<b>96</b>
<b>Diploma in Mechanical Engineering</b>	<b>20</b>	<b>48</b>	<b>35</b>	<b>103</b>
<b>Bachelor Degree in Electrical Engineering</b>	<b>40</b>	<b>98</b>	<b>71</b>	<b>209</b>
<b>Bachelor Degree in Civil Engineering</b>	<b>46</b>	<b>114</b>	<b>83</b>	<b>243</b>
<b>Bachelor Degree in Mechanical Engineering</b>	<b>49</b>	<b>123</b>	<b>89</b>	<b>261</b>
<b>Total</b>	<b>189</b>	<b>467</b>	<b>339</b>	<b>995</b>

**Source: Calculation**

The primary data collection instrument used in this research was the questionnaire. Questionnaires were developed used to accumulate data, with a purpose to fulfill first, second, third and fourth research objectives. The questionnaire is divided into two sections which are A and B. Section A is about demographic aspect. The Likert Scale (1 to 5) was used to measure the respondent's perception on related items. The statistics interpretation as proposed by Lendell K (1997) was used; is 1.0-2.3 (disagree), 2.4-3.7 (more or less agrees) and 3.8-5.0 (agree).

Two sets of question for the common course students with the subject code - BUN 3112, being the other instrument were also used in the research. The first question tested in the examination are based on knowledge and understanding. Meanwhile, the second set of the examination was open book examination. The criteria used in the second sets of examination are application, syntheses which evaluation. Both sets are instruments used to fulfill the fifth objective in the research that was identifying the effectiveness of examination by referring to books compared to regular examination.

In addition the research was carried out to create the question items and the result was realized using reliability, which carry a number of 0.796. Thus, all items in the questionnaire have high reliability. According to Jamian Jaafar (1996), the collected data

that has an alpha 0.6 and above have a good reliability. In order to fulfill the second objective, a two way T-test (Paired-variables) was used and the level of confidence used was 0.05. SPSS version used.

## 8. FINDINGS

### Students' Perception towards the Acceptance of Open Book Examination

**Table 2: Mean Score of Students' Perception Towards the acceptance of Open Book Examination.**

N	Minimum	Maximum	Mean	Standard Deviation	
Happy to sit for a test	995	2	5	4.29	.63
Reducing the pressure of memorizing	995	2	5	4.51	.60
Good experience	995	2	5	4.23	.67
Open book examination suitable for course	995	1	5	4.35	.70
Suitable for education	995	1	5	4.29	.70
Total mean	995	1.60	5.00	4.3323	.4990
Valid N (list wise).	995				

Referring to Table 2 above, the total perception score on acceptance are 4.33 which is reflective of the students acceptance of open book examination. As regards statements connected to perception of *reducing the pressure of memorizing* the mean score is 4.51. Next is the statement connected to perception of *open book examination suitable for course* with a mean of 4.35. This is followed by the statement related to *happy to sit for a test* and *suitable for education* with the mean of 4.29 respectively. The statement that is connected to perception of *good experience* gains the lowest acceptance with a mean of 4.23. The table above also shows a standard deviation between of 0.60 to 0.70 which is less than one and this means respondent's acceptance is convergent to each item listed in the acceptance's domain.

### Student's Perception towards Open Book Examination in Terms of Increasing Thinking Skills.

**Table 3: The Mean of Student's Perception Towards Open Book Examination That Will Increase Thinking Skills.**

	N	Minimum	Maximum	Mean	Standard Deviation
Make analysis towards one fact	995	1	5	4.22	.68
Can apply information	995	2	5	4.23	.68
Relating the facts to another fact	995	1	5	4.18	.66

<b>Answered the assessment level</b>	<b>995</b>	<b>2</b>	<b>5</b>	<b>4.22</b>	<b>.66</b>
<b>Challenge mind</b>	<b>995</b>	<b>1</b>	<b>5</b>	<b>4.05</b>	<b>.75</b>
<b>Total mean</b>	<b>995</b>	<b>1.60</b>	<b>5.00</b>	<b>4.1779</b>	<b>.4953</b>
<b>Valid N (list wise).</b>	<b>995</b>				

According to Table 3 above, the statement that is connected to open book examination may help the student to *apply information* is the highest with a mean of 4.23. The lowest statement from the respondent's perception is connected to the open book examination is *challenge mind* with a mean of 4.05. Other statements also agreed by all the respondents were to *make analysis towards one fact* and *answered the assessment level* with a mean of 4.22 respectively. The respondents also agreed with the statement *relating the facts to other facts* which scored a mean of 4.18. Meanwhile, the total mean shows that respondent's perception is in agreement with the open book examination which says it can increase thinking skills domain. The respondents respond towards each statement in the thinking skill domain is convergent when it is referred to the standard deviation between of 0.66 to 0.75 (less than 1) in the table above.

#### **Student's Perception toward the Adequacy of Open Book Examination to Fulfill Course Evaluation.**

**Table 4: Mean Score of Student's Perception Toward The Adequacy of Open Book Examination to Fulfill Course Evaluation.**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Standard Deviation</b>
<b>Result portray mastered courses</b>	<b>995</b>	<b>1</b>	<b>5</b>	<b>3.79</b>	<b>.78</b>
<b>Lecturer's assessment more fair</b>	<b>995</b>	<b>1</b>	<b>5</b>	<b>3.97</b>	
<b>Assist the lectures identified students who achieve the objective</b>	<b>995</b>	<b>1</b>	<b>5</b>	<b>3.81</b>	<b>.75</b>
<b>Assist the lecturer to upgrade the method of teaching</b>	<b>995</b>	<b>2</b>	<b>5</b>	<b>4.05</b>	<b>.68</b>
<b>Lecturer can build various of question level</b>	<b>995</b>	<b>2</b>	<b>5</b>	<b>4.11</b>	<b>.67</b>
<b>Total mean</b>	<b>995</b>	<b>2.00</b>	<b>5.00</b>	<b>3.9459</b>	<b>.5317</b>
<b>Valid N (list wise).</b>	<b>995</b>	<b>1</b>	<b>1</b>		

Schedule 4 above shows that the respondents agrees with student's *results through open book examination in mastering the courses* (min 3.79). Overall mean towards domain of examination suitability refers to books with the course evaluation is 3.94 and this shows that the respondent agrees with the domain. The highest declaration received from respondents' agreement with a mean of 4.11 is open book examination which can help the *lecturers to create various levels of examination questions*. A mean of 4.05 is recorded regarding *assisting the lecturer to upgrade the method of teaching*. The other statements relating to the examination by referring to books can *assist the lecturers to identify students*



who achieve the objective and excellence of the students can be more appropriately measured, and this is shown with mean 3.97 and 3.81.

### Student's Perception on Open Book Examination towards Fulfilling the Objectives of the Course.

**Table 5: Mean Score of Student's Perception Towards Open Book Examination to Fulfill the Objectives of the Course.**

	N	Minimum	Maximum	Mean	Standard Deviation
Feel challenged to achieve the course objective	995	2	5	4.05	.69
Easier to identify the student who achieves objective	995	2	5	4.13	
Give fair opportunity to student	995	1	5	4.19	.67
Is able to insert the competence thought in course objective	995	2	5	4.17	.62
Lecturer can diversify into course objective	995	1	5	4.21	.62
<b>Total mean</b>	<b>995</b>	<b>1.80</b>	<b>5.00</b>	<b>4.1491</b>	<b>.4972</b>
<b>Valid N (list wise).</b>	<b>995</b>				

From Table 5 above, we can see clearly that the domain for open book examination can fulfill the course's objective has a mean of 4.14. All of the statements in the domain score a mean of more than four which is the statement connected to *feel challenged to achieve the course objective* (mean 4.06), *easier to identify the student who achieves objective* (mean 4.13), *give fair opportunity to student* (mean 4.19), *is able to insert the competence thought in course objective* (mean 4.17) and the highest mean is on the statement connected to *lecturer can diversify course objective*. The respond from the respondents are convergent to each item listed in the course domain's objective. When referred to the standard deviation is between 0.62 to 0.69 and it less than 1.00.

### 8.1 Open Book Examination Effectiveness

Looking at the effectiveness of this open book examination from the aspect of student's achievement was the third objective in this study and the hypothesis was Ho. There is no difference between students who took the normal examination and open book examination. For that purpose, about 46 students had been selected from one course to be a sample for this task. They had been developed into two ways of taking examination. The first was the close book examination and the second one was the open book examination. The question for close book examination was using the first and second level of Bloom's Taxonomy. Meanwhile, open book examination, sixth level of the Taxonomy. T test (Paired-sampled) had been done to both marks in both examination and the result obtained are:

	Paired Differences					t	df	Sig. (2-tailed)
		Std	Std	95% Confidence				
	Mean	Deviation	Error	Lower	Upper			
Pair Marks 1 Exam 1 (Close Book) - Marks Exam 2 (Open Book)	-8.26	12.1	1.7	-11.87	-4.65	-4.609	45	.000

Statistic Interpretation: From the table, the significant levels for observation differences are equal of 0.000. Those significant levels are less than 0.05 (0.05/2). It shows that there is significant difference between both groups. Therefore, the findings reject null hypothesis. Thus there is a difference between student's achievement in normal examination and open book examination.

For better results, comparisons between mean for total result of close book examination and mean for total result of open book examination have been done. And the results are mean for normal examination is 63.20 and mean for open book examination is 71.46.

## 9. CONCLUSION

Deduction from this case shows that respondents have given a positive respond in their perception of accepting this open book examination especially in examination for General Study courses in KUITTHO. The result for the first objective shows that they accepted that the open book examinations are suitable for courses that had been followed and at all education level. This finding supports the research that had been done by Ahmad Esa and Khairul Azman Mohd Suhaimy (2000) that also shows that respondent accepted this open book examination in Political and Malaysia Nationhood and the finding of Loi Soh Loi ad Wu Yuan (2001) who found that 60% of their respondents accepted the open book examination more than close book examination. In a study conducted by Mohanan K.P (2001) he found that the respondents claimed that the successful implementation of open book examination is not dependable on the type of courses but on the type of questions.

As for the second objective that is related to thinking skills, the respondent agreed that open book examination could challenge one's mind. In accordance with the statement that have been made by the former Malaysian Education Chief Director, Tan Sri Datuk Dr. Wan Mohd Zahir bin Mohd Nordin (cited from Sooraj Nair, 1996) said open book examination can stimulate student's thinking skill as compared to memorization. Professor Madhya Winston Seah from the Faculty of Engineering (cited from in Mohanan K.P, 2001) said that open book examination can test both aspects of knowledge and ability to think through questions that ask students to see the ability in the real situation of their engineering profession.

As for the third objective that is about perceptions toward assessment the respond was also positive. The respondents said that the open book examination allows them to give a real portray of themselves in mastering the course and student's achievement can be measured

accurately. It allows lecturers to repair and improve on their teaching methods. This can avoid doubts and it was found by Robiah Sidin (1994) and Mohd Najib Ghafar (1997) that examination limits the measurement of student's achievement. This is because open book examinations give fair and equal chance to all students without needing a strong brain to memorize. Analogically, at least one student who is sick (cannot memorize) still have a chance to answer and make an analysis through this open book examination system. According to Mohanan K.P (2001) the open book examination system allows lecturers to diversify their learning methods.

Respondents also gave a positive respond in the fifth objective relating to course objective. Among the attractive statement that has been agreed by the respondents is to feel challenged to meet course objectives and to portray real achievements of the student. This supports Mohanan K.P (2001) view who said open book examination can help students to understand the course's contents and also test their ability and competence to apply this knowledge in a new form. Actually, the oriented application questions are better instruments to test the contents of every course. Theophilides and Dionysio (1996 cited from Loi Soh Loi and Wu Yuan, 2001) also said that there was no significant difference to the results in open book examination which shows course content's performance.

## **10. CLOSING**

Therefore, the findings show that examination is always related to success. However, questions do arise as regards examination as an accurate measurement. This is because there are a few cases whereby one did not succeed in examination but really succeeded while they are entering job market. On the other hand, a few of them really succeeded in examination but failed when entering job market. This shows that there is room for improvement for the adoption of open book examination. It is proven that those who are excellent through this kind of examination go through the process of testing which is very tough in terms of intellectual and knowledge acquisition and have equal preparation such as to face the working world. Logically, the best alternative for solving a problem faced in job situations is by making reference but definitely not memorization.

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