# Students' Perspective of Open Book versus Closed Book Examinations in Higher Education Institutions during COVID-19 Pandemic in Indonesia

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## Abstract

The COVID-19 Pandemic has proven to be one of the enormous disruptions in educational institutions globally, including Indonesia. Keeping aside the fiscal working of these institutions, no institution wanted to compromise on the quality of education given to the students, especially in online learning practices. Holding traditional examinations procedures under such circumstances was impossible; thus, it shifted assessment practices from the closed-book exam (CBE) into the open-book exam (OBE) in these Higher Learning Institutions. This study used a quantitative approach to investigate the impact of OBE on students online learning performance and satisfaction. Utilising a descriptive research design, a total of 152 undergraduates from two public universities in the West Nusa Tenggara Province were randomly selected using a stratified sampling technique. The findings showed that students perceived their academic performance has increased since the OBE implementation and had high satisfaction with OBE as an assessment tool. The inferential analysis showed a positive and significant relationship between perceived academic performance and satisfaction towards OBE. The t-test also indicated a significant difference between students' satisfaction obtained by male and female students. However, no significant difference was found in students" preference between OBE and CBE. The implication of the findings suggests that the landscape of assessment in HEI has changed drastically over the last two years. The implementation of OBE has an increased potential to measure students' higher-level thinking skills as it relates more closely to real-world work environments. Secondly, it is likely to throw up new challenges for both instructors and students in their teaching and learning practices.

**Keywords:** Open-Book Exam, Closed-Book Exam, Students' perception, Higher Learning Institution, COVID-19 Pandemic

## INTRODUCTION

The COVID-19 Pandemic has dictated much of the worldwide Higher Learning Institutions community is thrown into an uncharted, unexpected, unwelcome, and perilous experiment in online learning, including Indonesia. During the COVID-19 outbreak, the key activities in higher education learning institutions, such as student admissions, trial examinations, mid- and final-semester exams, and co-assistants, necessitate adaptations (Masjaya et al., 2020). Educators and students must rely on technology in their teaching-learning processes. The usage of learning-centered environments also evolved during a period of dramatic change in the educational landscape, which included curriculum changes, new methods of teaching and evaluation, and an emphasis on process improvement (Ramaley

& Leskes, 2002). The instructors are responsible for ensuring the quality of online learning lessons. Teachers should have a good attitude toward online teaching, provide an effective learning environment, create an engaging online teaching-learning community, and use accurate and rigorous performance evaluations (Yang & Cornelious, 2005).

Similarly, the assessment procedures are also shifted in conducting online teaching and learning activities. Alltizer & Clausen (2008) argued that such outcomes, together with the inevitable change from traditional pencil-and-paper exams to software exams, had already prompted scholars to explore a number of creative testing techniques, such as academic stress, readiness, and how students view various test methodologies. Assessments in online education must be active and genuine to provide meaningful learning experiences for the students. Thus, the educators must opt whether to utilise both closed-book and Open-Book tests or not in their evaluation.

There have been many studies done comparing the effectiveness of Closed-Book and Open-Book Examinations. For example (Ioannidou, 1997; Theophilides & Dionysiou, 2000; Francis, 2006; Durning et al., 2016; Rummer et al., 2019; Ashri et al., 2021). However, research examining Open-Book vs Closed-Book exam performance showed slight or minor variations (Stowell, 2015). The idea was supported by a study done by Ioannidou (1997) in which he reported that between students taking the open-book exam and those who took the closed-book exam, there is no significant difference in total exam score. Based on the total exam score, students who encountered the closed book setting scored considerably better than students who have experienced the open book setting. The latter studies also reported no significant distinctions between the students' grades in Closed-Book and Open-Book Examinations (Brightwell et al., 2004; Rummer et al., 2019). However, Soh-Loi & Teo (1999) argue that CBEs emphasise low-level skills like rote memory rather than high-level abilities like reasoning, conceptualisation, and problem-solving. Furthermore, a closed book exam only assesses a student's ability to function under minimal circumstances.

On the other hand, the OBE supporters believe that it permits teachers to ask questions that need higher-order cognitive skills and critical thinking rather than rote memorisation (Durning et al., 2016). As we face the 21st century, education institutions, specifically Higher Learning Institutions, should alter the evaluation system in teaching-learning. The students need to be equipped with critical and analytical thinking skills. The primary aim of education is to convey knowledge from the teacher to the student while also encouraging critical thinking skills (CT). Teachers and students alike would agree that developing CT skills is one of the most challenging learning components (Johanns et al., 2017). In this way, an open book exam assists students in developing their critical thinking skills. For instance, according to Feller (1994), open-book exams can foster deeper thinking and learning by more closely imitating what instructors expect students to do in real life when they are entirely implemented. Likewise, Theophilides & Koutselini (2000) on their study reported that the open-book assessment procedure prompted students to adopt "depths" learning strategies while studying for the exam, as well as to develop their knowledge on the test creatively. In essence, the exam has become a learning process involving knowledge transfer and practising critical thinking abilities.

Besides, Williams & Wong (2009) observed that OBE helps promote an opportunity to better understand processes in terms of real-world performance instead of a display of absorbent knowledge, and students are provided with unstructured issues that require the implementation of knowledge and skills rather than selection from predefined options, as is the case with multiple-choice exams. Also, Eilertsen & Valdermo (2000) reported that numerous students reported being more focused and concentrated on grasping the content throughout the lessons. Likewise, (Afshin Gharib et al., 2012) found out that students performance on Open-Book exams was marginally better than on Closed-Book exams. They also favoured Open-Book and cheat-sheet exams over Closed-Book exams and had lower anxiety levels when taking Open-Book exams than cheat-sheet exams and Closed-Book exams. Thus, studies on OBEs and CBEs have investigated that OBEs were statistically significant than CBEs (Vidya, 2019). Therefore, this paper investigated the students' perspective toward OBEs and CBEs on students' learning performance in Higher Learning Institutions in Indonesia. This study also aimed to identify the students' satisfaction and preference towards the mode of the examination (Open and Close-book tests) during the COVID -19 pandemic. Additionally, the study sought to gather students' feedback on their satisfaction with OBE vs. CBE, taking gender into consideration.

Moreover, this study provides guidelines for improving these assessment guidelines in the future. The previous studies merely focused on examining and comparing the effectiveness of OBEs

and CBEs in overseas' contexts before COVID-19 Pandemic. Therefore, this study would fill in the gap of exploring the impact of Open and Closed-book Exams, especially in Indonesian Higher Education contexts during the COVID-19 outbreak, which the other previous studies have not done.

Specifically, the objectives are to investigate the relationship between the perceived academic performance of students and their satisfaction with Open-Book Examination in Higher Learning Institutions during the COVID-19 pandemic. Furthermore, this study also examines the difference in students' satisfaction with Open-Book Examination between genders in Indonesian Higher Learning Institutions during the COVID-19 pandemic. As well as to examine the difference in students' perceived preference towards Open-Book Examination vs. Closed-Book Examination in Indonesian Higher Learning Institutions during the COVID-19 pandemic.

## METHOD

The study utilised a descriptive design to investigate the impact of open-book exams on students online learning performance and satisfaction. By investigating a population sample, this design gives a quantitative description of trends, behaviours, and views in that group or tests for connections among variables in that population (Creswell & Creswell, 2018).

The study's population consists of approximately 360 final-year undergraduate students from the social science faculties of two public universities located in West Nusa Tenggara. The respondents were selected using a stratified simple random sampling technique based on gender during the Covid-19 outbreak in Indonesia. According to the Morgan and Krejcie Table (1970), the required sample size is 186. However, due to internet connectivity issues in the area, 152 participants were selected, which accounts for about 82% of the required sample size for generalization. The researchers acknowledge this limitation, which may affect the generalization of findings.

Accordingly, the instruments used for the data collection process were adapted (from Doghonadze & Demir, 2018; Vyas & Vyas, 2009) to explore students' perceived views on the Open Book exam. This questionnaire was divided into ten parts. It aimed to attain the students' perspectives on OBE and CBE. The respondents had to answer the demographic information at the beginning. The students gave specific information on their exposure to OBE and CBE in the next part. The respondents also had to indicate their views amongst their perceived academic performance of open book test assessment, their perceived preference of open book test, including their perceived preference towards pencils and paper test, students' perception of open versus closed book test, and finally, they had to depict their satisfaction of OBE on a-10 points scale where one depicts strongly disagree, and ten as strongly agree.

The questionnaires were then distributed using Google forms, and it was distributed using E-mail as well as WhatsApp to the respondents. They completed anonymously during their free time. It took about three weeks to receive the questionnaires back from the respondents.

The data were analysed using descriptive statistics and inferential statistics. The descriptive statistics investigated the students' perceived satisfaction and academic performance. At the same time, inferential statistics were utilised to determine the relationship among the variables. t-test was used to identify whether there were significant differences in students' satisfaction towards Open-Book Examinations between gender and the perceived preference of students towards Open-Book vs. Closed-Book Exam. This was followed with a correlational measure using Pearson r was used to identify the correlation between academic performance and satisfaction with OBE. The analysis in this study was conducted with adherence to the fundamental requirement for inferential statistics. To test for normality, a Kolmogorov-Smirnov test was employed. This entailed comparing the cumulative distribution function of the observed data with that of the normal distribution. The resulting p-value was found to be greater than the significance level of 0.05, leading us to conclude that the data met the normality assumption. Furthermore, random sampling was employed to select the samples, ensuring that the data was representative of the population of interest. Finally, the sample size was determined to be sufficiently large based on the population size of the study. By meeting these key assumptions, the statistical analysis was conducted with greater accuracy and confidence, allowing for reliable conclusions to be drawn from the study.

## RESULTS

This section details the findings of the study based on the research questions posed.

### The Demographic Information of the Respondents

Table 1 displays the distribution of samples by gender, with a total of 152 participants involved in the study. Of the total sample, 31 (20.4%) were male students, while 121 (79.6%) were female students.

**Table 1.** Distribution by Gender

| Gender | Frequency | Percent |
|---|---|---|
| Male | 31 | 20.4 |
| Female | 121 | 79.6 |
| **Total** | **152** | **100.0** |

### Research Question (1): What is the level of students perceived academic performance towards the Open-Book Examination during the COVID-19 pandemic?

Table 2 shows that the highest mean score of 6.94 (SD=2.07) is obtained for item "The grades I received in the Open Book Test approach is usually higher than the grades obtained in a traditional Paper and Pencil Test examination.". It is followed by "I have a better exam pass rate when I use Open Book Test than Paper & Pencil Test." with a mean score of 6.85 (SD=2.23). On the contrary, the lowest mean scores are 6.17 (SD=2.33) and 6.35 (SD=2.19) for item "My academic performance has improved since using Open Book Test" and "I usually obtained higher scores in my assessment via Open Book Test as compared to Paper & Pencil Test" respectively.

The mean score of 6.53 falls within the range of moderate to good performance, indicating that the students generally perceived their academic performance as moderately high (moderate to good towards Open-Book Exam during the COVID-19 pandemic. Additionally, the standard deviation of 2.21 suggests that there was some variability in the responses, with some students perceiving their performance as higher or lower than the mean.

**Table 2.** Students' Perceived Academic Performance Towards Open-Book Exam

| | N | Mean | SD |
|---|---|---|---|
| The grades I received in the Open Book Test approach is usually higher than the grades obtained in a traditional Paper and Pencil Test examination | 152 | 6.94 | 2.07 |
| I have a better exam pass rate when I use Open Book Test as compared to Paper & Pencil Test. | 152 | 6.85 | 2.23 |
| I usually obtained higher scores in my assessment via Open Book Test as compared to the Paper & Pencil Test. | 152 | 6.35 | 2.19 |
| My academic performance has improved since using Open Book Test. | 152 | 6.17 | 2.33 |
| My academic performance is better because it is easier to prepare for an Open Book Test approach as compared to Paper and Pencil Test | 152 | 6.36 | 2.26 |
| **Overall** | | **6.53** | **2.21** |

Scale 1 to 10

### Research Question (2): What is the level of students' satisfaction towards the Open-Book Examination during the COVID-19 pandemic?

Table 3 depicts that the highest mean score of 6.73 (SD=2.00) is attained for the item "I am satisfied with online Open Book Test being used currently." It is followed by "I am satisfied with the influence of Open Book Test on my understanding of the subject matter." with a mean score of 6.65 (SD=2.11). In contrast, the lowest mean scores are obtained from the items "I like the idea of Open Book Test" and "I will gladly take another Open Book Test for my course assessment," with mean scores of 5.07 (SD=2.24) and 5.18 (SD=2.07) respectively. The overall mean score of 5.91 falls within the range of moderate satisfaction, indicating that the students generally felt moderately satisfied with the Open-Book Examination during the COVID-19 pandemic.

**Table 3.** Students' Perceived Satisfaction Towards Open-Book Exam

| | N | Mean | Std. Deviation |
|---|---|---|---|
| I am satisfied with online Open Book Test being used currently. | 152 | 6.73 | 2.00 |
| I am satisfied with the influence of Open Book Test on my understanding of the subject matter. | 152 | 6.65 | 2.11 |
| The knowledge I gained from Open Book Test was as good as Paper and Pencil Test (Close Book). | 152 | 6.22 | 2.11 |
| I will gladly take another Open Book Test for my course assessment. | 152 | 5.18 | 2.07 |
| I like the idea of the Open Book Test. | 152 | 5.07 | 2.24 |
| **Overall** | | **5.97** | **2.10** |

Scale 1 to 10

## Research Question (3): Is there a significant relationship between students perceived academic performance and satisfaction towards Open-Book Examination during the COVID-19 pandemic?

The Table 4 indicates a moderately high, positive, and significant relationship ($r=.585$, $p<.05$) between students' perceived academic performance and satisfaction with the Open-Book Exam at the level of 0.05. Therefore, we reject the null hypothesis. The coefficient of determination obtains $r^2=.34.2$, and this indicates that 34.2% of student's perceived academic performance can be explained by their satisfaction with the Open-Book Exam and vice versa.

**Table 4.** Correlation Analysis between Academic Performance and satisfaction of OBE

| | | Academic performance | Satisfaction of OBE |
|---|---|---|---|
| Academic Performance | Pearson Correlation | 1 | .585** |
| | Sig. (2-tailed) | | .000 |
| | N | 152 | 152 |
| Satisfaction of OBE | Pearson Correlation | .585** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 152 | 152 |

**. Correlation is significant at the 0.01 level (2-tailed).

## Research Question (4): Is there a significant difference in the students' satisfaction towards Open-Book Examinations between gender during the COVID-19 pandemic?

The data in Table 5 shows the mean score obtained by male students is 5.63 (SD=1.69) compared to the female students' score of 6.25 (SD=1.61). An independent sample t-test was performed to determine whether there was a significant difference between these scores. The t-test analysis indicates a significant difference [$t(140)=-2.288$, $p<.05$] between students' satisfaction obtained by male and female students. Thus, we reject the null hypothesis.

**Table 5.** Comparison of Students' satisfaction towards OBE between gender

| Gender | N | Mean | Std. Deviation | t | df | sig |
|---|---|---|---|---|---|---|
| Male | 31 | 5.63 | 1.69 | -2.288 | 140 | .024 |
| Female | 121 | 6.25 | 1.61 | | | |

Scale 1 to 10

## Research Question (5) Is there a significant difference in the perceived preference of students towards Open-Book vs. Closed-Book Exam during the COVID-19 pandemic?

Table 6 indicates that the mean score of students' perceived preference in the open-book test is 6.81 (SD=1.73). On the other hand, the mean score obtained in the perceived preference of students in the

closed-book test is (SD=1.54). A paired sample t-test was conducted to investigate a significant difference between these scores based on student preferences. Findings show no significant difference [t(151) =1752,p=.082] students' preference between OBE and CBE. Thus, we failed to reject the null hypothesis.

**Table 6.** Perceived preference of students towards Open-Book Exam vs. Closed-Book Exam

| Students' preference towards | | Mean | N | SD | t | df | p |
|---|---|---|---|---|---|---|---|
| Pair 1 | OBE | 6.81 | 152 | 1.73 | 1.752 | 151 | .082 |
| | CBE | 6.46 | 152 | 1.54 | | | |

## DISCUSSION

The study attempted to report on the students' perceptions of OBE versus CBE in the context of Higher Learning Institutions in Indonesia. It sought to identify the students' academic performance and satisfaction levels perceived by the university students. On the one hand, to examine if there are associations among the variables, correlational analysis and t-test were employed.

The descriptive analysis of the survey showed that the students perceived a moderately high-level academic performance towards the Open-Book Examination during the COVID-19 pandemic. For instance, they elucidated in the item "*The grades I received in the Open Book Test approach is usually higher than the grades obtained in a traditional Paper and Pencil Test examination"* with mean score of 6.94 (SD=2.07). In other words, they viewed that the grades they received on OBE are usually higher than the scores they attained on the traditional assessment method (CBE). Similarly, about the student's satisfaction towards OBE, the students also perceived that they were glad and satisfied in experiencing the OBE method in their learning assessment. Most of them felt content on the effect of OBE on their understanding of the subjects and the use of online, open-book tests employed by their instructors. Moreover, students who took open-book pre-exam quizzes did much higher on the open-book final test than students who took closed-book pre-exam quizzes, which is consistent with the findings of a prior study conducted by Green et al. (2016). Furthermore, (Ramamurthy et al., 2016; Afshin Gharib et al., 2012) also found that students' achievement in the OBE was much better than their performance in the CBE. The students who experienced the OBE had higher marks than CBE.

On the one hand, the inferential statistics analysis implied a positive and statistically significant association between perceived academic success and satisfaction with OBE. It is consistent with the findings of Williams & Wong (2009), who discovered that students believed the OBOW exam was designed in such a way that cheating would be difficult, as it is based on a recent case study that was created and personalised considering the concepts, notions, and obstacles debated in discussion groups and projects. In particular, OBE in online learning environments can be built to encourage learners to use internet resources to problem-solve smoothly and economically (Zagury-Orly & Durning, 2020). In this study, the findings also reported a significant distinction between students' satisfaction attained by male and female students with the mean score of 5.63 (SD=1.69) and 6.25 (SD=1.61). There are few studies concerning students' level of satisfaction that are still less explored. There is just a little empirical research on the influence of gender on the acceptability and satisfaction of an e-examination or evaluation (Shakeel et al., 2021). However, Bisht et al. (2020) research revealed that female students were more accepting and satisfied with ABE than male students, indicating a gender difference. However, the results of this study are not consistent with those reported by Shakeel et al. (2021), who found no significant association between students' gender and their acceptance of OBE.

An appealing further outcome of this study unveils no relationship between the choice made of OBE versus CBE among the students. It shows that the preference to utilise the OBE model in this study did not favour the students. It is in line with the findings reported by Zoller & Ben-Chaim, (1997) that among students in the first three years of college, there was no discernible variation in their preferences in the types of examinations between groups. Some scholars have also pointed out some drawbacks to using OBE in certain situations. For example, the students unanimously agreed that they spend significantly less time studying, writing, and accessing notes and texts for the oral board exam (Vidya, 2019).

Ioannidou (1997) found no statistically significant difference in total test scores between students who took an open-book test and those who took a closed-book exam. Similarly, Johanns et al.

(2017) reported that different types of exams can promote deep learning, with some studies indicating that closed-book exams can result in a more in-depth learning experience (Durning et al., 2016; Block, 2012), while others suggest that open-book exams can lead to deeper learning (Williams & Wong, 2009; Stowell, 2015).

As such, educators must carefully consider the assessment tools they use in their teaching, particularly given the significant shifts in the landscape of assessment in higher education during the Covid-19 pandemic. Outcome-based education (OBE) has emerged as a promising approach, given its potential to measure higher-level thinking skills that are more closely related to real-world work contexts. However, the implementation of OBE is likely to present new challenges for both instructors and students, and must be approached with care and attention to ensure its effectiveness in enhancing teaching and learning processes.

## CONCLUSION

Based on the results of the study, educators and policymakers should give careful consideration to the efficacy and acceptance of various forms of assessments, particularly in light of the Post COVID-19 pandemic. The results of this study suggest that the Open-Book Exam was generally perceived as a viable assessment tool, and was associated with moderately high levels of academic performance and satisfaction. This is particularly noteworthy given the challenges posed by the pandemic, which have forced many educational institutions to rely on online and remote learning platforms that may present unique challenges for students and educators alike.

However, it is also important to note that the study did not find a significant difference in students' preference between the Open-Book Exam and the Close-Book Exam. This suggests that while the Open-Book Exam may be an effective and acceptable assessment tool in some contexts, it may not be universally preferred or applicable. Further research is needed to explore the factors that influence students' preferences and perceptions of different types of assessments, as well as the effectiveness of these assessments in promoting student learning and achievement.

The results of this study offer significant contributions towards understanding the intricate and multifarious dimensions of assessment during the COVID-19 pandemic. These insights are equally relevant and applicable for future post-pandemic situations. They underscore the need for educators and policymakers to consider a range of assessment strategies and to be responsive to the changing needs and preferences of students in this challenging and rapidly evolving educational landscape. By leveraging the insights from this study and other ongoing research in this area, educators and policymakers can work together to ensure that students receive high-quality education that meets their needs and supports their academic success.

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