

ANALYSIS OF OPEN-BOOK EXAMINATIONS IN HIGHER EDUCATION

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Abstract

This paper examines the open-book examination (OBE) system, a form of assessment where students can use reference materials like textbooks and notes during the exam. The study uses a SWOT analysis to identify the key aspects of OBEs and further investigate the perspectives of university teachers on the factors that affect the integrity of these examinations. A mixed-methods research design was employed to fulfil the dual objectives of the study. The purposive sampling technique was used to select the research sample, which comprised 94 university teachers. Data was collected using a five-point Likert Scale and analyzed using frequency, percentage, and mean. The findings of the analysis showed that test paper design, administrative issues and unreliable evaluation are the main causes compromising the integrity of open-book exams. However, malpractice issues and diminishing education quality had a modest influence.

Keywords: Open-book, Assessment, University teachers, NEP, Council.

Introduction

The 21st century educational systems are transforming human capital into intellectual capital. It is deemed essential to nurture young individuals who are capable of independent and creative thinking. Many scholars suggest that the inclusion of open-ended tasks in assessments enhances skills and provides an enriched educational environment that allows students to interact with content more thoroughly and successfully answer complex questions (Kaur, 2016). The initiative for open-book examinations aims to provide a more

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engaging learning experience and alleviate the pressure often associated with traditional tests. Further, it was considered a strategic approach to enhance students' critical thinking, problem-solving, and analytical skills (The Hindu Bureau, 2024). In 2018, the All-India Council for Technical Education (AICTE) introduced its examination reform policy. This policy supported open-book assessments as a method to evaluate higher-order skills, aligning with Bloom's Taxonomy, and addressing the limitations of conventional examination formats (Sahasrabudhe et al., 2018). The open-book examination (OBE) is gaining popularity among policymakers and national boards as a novel approach. In an effort to align with the National Education Policy (NEP) 2020's focus on diverse assessment methods, the Central Board of Secondary Education (CBSE) is exploring the feasibility of open-book exams in the Indian education system. As part of this initiative, the CBSE has launched a pilot program for students in grades 9 through 12. The pilot program aims to assess the effectiveness of open-book exams and determine the time required for them, as well as their applicability for both classroom and final examinations. The subjects being evaluated are English, Science, and Mathematics for grades 9 & 10, and English, Mathematics, and Biology for grades 11 & 12. This research is being conducted in a select number of CBSE-affiliated schools, and it will include comprehensive feedback from students, teachers, and other key stakeholders (Goyal, 2024). Although the previous implementation of open-book examinations faced challenges that led to its discontinuation in 2017-2018.

Moreover, to make the system more robust, the Delhi Technological University has implemented AI-powered proctoring into its examination processes. This includes features like real-time monitoring, automated identity verification through facial recognition, and screen activity tracking. These innovations illustrate the potential of AI-enabled proctoring systems to maintain academic integrity in online and open-book assessments. However, the Times of India (2021) points out that the rapid technological advancement also poses challenges, meaning that maintaining academic integrity in this expanding digital landscape requires constant adaptation and

vigilance. Therefore, it is imperative to study the open-book examinations thoroughly.

Meaning and Concept of Open-Book Examination

According to Sharma (2023), an open-book exam (OBE) is an assessment method that permits students to consult their study materials, such as textbooks & notes, while taking the test. This format contrasts with the traditional closed-book examination system, which relies solely on a student's memory and comprehension of the subject matter. The core philosophy behind OBEs is the belief that real-world problem-solving often requires external resources, as professionals typically make decisions by referencing materials rather than relying solely on memorization.

Open-book exams are designed to test more than just your ability to memorize facts. They assess how well you can apply knowledge, think critically, and connect different concepts. This format is intended to simulate real-world scenarios where people can access resources and references to solve problems. By allowing students to use their study materials, educators create an evaluation environment that simulates a professional in a formal setting. This strategy encourages a more profound understanding of the subject and strengthens critical thinking skills through the effective interpretation and application of knowledge. OBEs are generally categorized into two types i.e. restricted and free-book. In a restricted format, candidates have limited access to pre-approved study materials. In contrast, free-book exams allow candidates unrestricted access to their books and learning resources. Given these variations, it is crucial for educators to meticulously design this examination system to accurately assess intended learning outcomes and provide a fair evaluation of students' abilities.

Closed-Book Vs. Open-Book Examination

Closed-book examinations are a widely accepted and extensively used method for evaluating students in higher education (Theophilides &

Koutselini, 2000). Unlike open-book exams, which allow students to use their textbooks and notes, the traditional testing method depends on a student's ability to recall information from memory

Despite being seen as unconventional by some, open-book examinations have gained popularity across all educational levels, from primary to higher education (Baillie & Toohey, 1997; Eilertsen & Valdermo, 2000). However, obstacles prevent their widespread adoption. Several studies indicate that students often spend more time searching for answers than formulating responses, which can lead to less time dedicated to exam preparation (Boniface, 1985; Theophilides & Koutselini, 2000; Rakes, 2008). Furthermore, research by Agarwal et al. (2008) has shown mixed results regarding the long-term retention of information with open-book exams. This issue is compounded by changes in students' study habits, influenced by their expectations of an open-book format, which may negatively affect long-term retention.

To maximize the effectiveness of open-book exams (OBEs), educators may need to adopt innovative teaching strategies that focus on various cognitive processes and knowledge levels. The design of these exams should give students ample opportunity to demonstrate their skills and knowledge within the time allotted. In a similar vein, Feller (1994) highlighted that educators should focus on teaching higher-level skills like conceptualization, problem-solving, and reasoning.

Early discussions on the topic raised concerns that OBEs might discourage students from studying, as a false sense of security could lead to minimal preparation (Kalish, 1958). Additionally, the widespread use of personal computers and search engines has significantly altered teaching methods in today's information-rich classroom. Consequently, open-book exams are being explored as a modern alternative to traditional assessment, with the potential to improve learning, lower stress, and develop essential skills.

Review of Literature

Assessing student competence and planning future teaching methods

both depend on effective evaluation (Izard, 1992; Johnson, 1977). According to Suchman (1972), evaluation in education is described as a deliberate process that aims to analyze the teaching and learning processes. Many academic disciplines have studied the relative merits of open-book and closed-book examinations, leading to a diverse and often inconclusive compilation of literature. To provide light on how each assessment method affects student learning outcomes and the educational process as a whole. According to Moore and Jensen (2007), open-book exams may hinder long-term retention of knowledge. The study suggested that the reliance on resources during the examination might reduce students' motivation to comprehend information. Research by Agarwal et al. (2008) indicates that although open-book tests yield better initial performance, these benefits may not last. Critics of closed-book exams, such as Williams (2006), argue that they encourage cramming and do not accurately measure deeper understanding, labeling them outdated.

In contrast, constructionist learning emphasizes that knowledge is created through active engagement rather than passive instruction. This approach upports the idea that open-book exams promote student engagement (Williams, 2006) and align with the focus on knowledge construction (Herrington & Standen, 2000). Further, Williams (2006) asserted that open-book exams are more authentic and better aligned with modern learning objectives, while Eilertsen and Valermo (2000) believe they encourage higher-order thinking and facilitate learning. Block (2012) claims that in a foundational statistics course, open-book exams reduced student stress and increased overall satisfaction, leading to more in-depth learning.

According to studies by Comas et al. (2021) and Janke et al. (2021), a significant increase in academic dishonesty was reported by students in Germany during the COVID-19 pandemic. Concurrently, there was an increased search for information regarding cheating in online examinations, reflecting a growing concern for academic integrity in digital learning environments. Interestingly, recent research has yielded contrasting evidence, indicating that the adoption of OBE is

associated with a significant reduction in cheating incidents, as observed by Nicola-Richmond and others (2023). This finding suggests that students may not inherently perceive the open book format as an opportunity for dishonesty; however, it is critical to ensure that they are adequately educated about academic integrity. The OECD Directorate for Education and Skills identifies academic dishonesty as a predominant challenge in higher education, particularly stressing the implications of the shift to online assessments (OECD, 2020).

When designed and implemented fairly, open-book exams can effectively help students develop critical thinking and decision-making skills. As highlighted by Er and Others (2023), students displayed reduced anxiety levels in open-book exam settings, emphasizing the need for effective operational mechanisms that facilitate smooth assessment experiences. To mitigate the risks associated with academic dishonesty, higher education institutions must prioritize the establishment of robust systems for open-book examinations. Recommendations include providing faculty with clear guidelines for question paper design and integrating advanced proctoring technologies to deter dishonest practices.

A study by Gharib et al. (2012) explored the effects of 'Cheat Sheets' within psychology courses. Their findings suggested that open-book exams performed marginally better than closed-book exams. Interestingly, students who expected better performance with open-book exams did not show significant improvement compared to those using cheat sheets, indicating a potential discrepancy between perceptions and actual performance. In their study at Delhi University, Ashri and Sahoo (2021) found that the average results of open-book exams were higher than those of closed-book exams. It was also noted that the university's insufficient focus on preparing students for open-book exams has been identified as a significant weakness. Further, the study of Pillai and Pillai (2022) highlighted the urgent need for educational institutions to guide students in developing analytical competencies to effectively utilize open-book examinations.

Rationale of the Study

The COVID-19 pandemic accelerated the need for innovative assessment methods. In response, Indian universities such as Delhi University (DU), Jamia Millia Islamia (JMI), and Jawaharlal Nehru University (JNU) incorporated open-book exams into their curricula during academic session 2020-2021 to prioritize analytical thinking over rote memorization. This shift aligns with the National Education Policy (2020), which emphasizes the need for better assessment practices to improve students' learning experiences. Similarly, the Central Board of Secondary Education (CBSE) is planning to introduce OBEs for students in grades 9 to 12 to reduce exam stress and move away from rote learning toward a competency-based approach. The National Curriculum Framework (2023) for School Education also supports this transformation, advocating for diverse assessment methods that cater to various learning styles, provide constructive feedback, and are aligned with learning objectives. However, the successful implementation of OBEs requires careful consideration of students' access to resources, particularly in a country with a diverse socioeconomic landscape (Jesiah, 2024). Studies indicate that many students experience stress, anxiety, and exam-related phobias at various points in their academic careers. Open-book exams are considered a viable alternative to traditional assessments. Research by Feldhusen (1961) and Jehu et al. (1970) suggests that OBEs can alleviate student anxiety and reduce the pressure of memorizing factual information. This examination format also promotes academic integrity by decreasing cheating and encouraging active learning during assessments (Tussing, 1951; Feldhusen, 1961). However, OBEs present their own challenges, such as students spending too much time consulting study materials, a potential decline in a thorough understanding of the subject matter, and an inability to answer questions appropriately (Kalish, 1958; Jehu et al., 1970; Tanner, 1970). Given these dynamics, a thorough examination of open-book exams is crucial, especially regarding their role in enhancing the integrity of assessments.

Objectives

1. To evaluate the strengths weaknesses, opportunities, and threats to open-book examinations.
2. To analyze the university teachers' perspectives on key factors that affect the integrity of open-book examinations.

Methods and Procedure

To investigate university teachers' perspectives on open-book exams, the authors conducted a study using a mixed-method research design, combining both qualitative and quantitative approaches.

Sample: A purposive sampling technique was employed to select university teachers from across India for the research sample. The sample comprises 94 university teachers, 80 were males and 14 were females. Among these 94 samples, 20 responses were from Professors, 10 from Associate Professors, and 64 from Assistant Professors. Regarding the teaching experiences, 12 university teachers had less than 5 years, 24 had 5 to 10 years, 31 had 11 to 15 years, and 27 had over 15 years of university experience.

Research Tool: A five-point Likert Scale was developed and administered by the authors, ranging from strongly disagree to strongly agree (1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree, and 5 for strongly agree) to understand the perspectives of university teachers on various factors that affect the integrity of open book examination. The questionnaire has 15 items in total, with three items from each factor (i.e., problem in designing test paper, administrative issues, malpractice issues, unreliable evaluation, and diminishing education quality). The key factors were identified through consultation with colleagues and experts.

Procedure of Data Collection: The authors conducted the online survey and shared a link to the Google Forms through WhatsApp and Email to university teachers nationwide. The responses of the faculty were taken from 1st January to 31st March 2025.

Results and Discussion

Considering the aforesaid objectives, the authors presented the results in two parts i.e. SWOT analysis of OBEs and factors affecting the integrity of OBEs.

SWOT Analysis of OBEs

The SWOT framework is a strategic analysis tool that evaluates four key areas, i.e., strengths, weaknesses, opportunities, and threats. It originated in the 1960s at Stanford Research Institute, and Alfred Humphrey has been credited for the same (The Decision Lab, 2021; Puyt et al., 2023). Similarly, the institutions use SWOT analysis to identify internal strengths and weaknesses, as well as external opportunities and threats, when implementing a new system (Sammut-Bonnici & Galea, 2015; Namugenyi et al., 2019). An organization's internal strengths and weaknesses offer a competitive advantage, while external opportunities and threats emerge from its surrounding environment. Within the field of teaching-learning, the open-book examination system can be evaluated by its strengths, weaknesses, opportunities, and threats. This paper's SWOT analysis, presented below, is based on an extensive review of existing literature.

(i) Strengths

1. The approach stimulates critical thinking, as highlighted by Nadarajah et al. (2021), Ranjana & Verma (2022), and Spitzer et al. (2025).
2. It provides an engaging experience for students, according to Doghonadze & Demir (2013).
3. The method prepares students for real-world applications (Gupta, 2007; Green et al., 2016; Dimari & Tyagi, 2024).
4. This has a proven effect on lowering student stress and anxiety (Gharib, Phillips & Mathew, 2012; Doghonadze & Demir, 2013; Paul, 2014).
5. This approach effectively assesses the application of knowledge.

(ii) Weaknesses

1. There can be significant time management issues (Patel, 2017).
2. There is a risk of copying among students (Comas et al., 2021; Janke et al., 2021).
3. This could lead to surface-level learning.
4. There is a lack of quality instructional materials.
5. There is an insufficient focus on student preparation (Ashri & Sahoo, 2021; Ranjana & Verma, 2022).
6. Unfair assessment practices can occur (Doghonadze & Demir, 2013).
7. Faculty training is necessary, along with a template to frame open-book exams (Hegade & Shetter, 2023).

(iii) Opportunities

1. The availability of digital textbooks presents a significant opportunity (Weisberg, 2011).
2. There is potential for using ICT tools in the creation of question papers.
3. Promoting digital literacy skills among students is possible.
4. A computer-based system for examination and evaluation can be implemented.
5. Better proctoring of online exams could be achieved.
6. The availability of quality reference materials is on the rise (Weisberg, 2011).

(iv) Threats

1. Designing questions that accurately measure higher-order critical thinking poses challenges (Patel, 2017; Hegade & Shetter, 2023).
2. Organizing reference materials can be difficult.
3. There are concerns about the availability of online materials.
4. The lack of ICT infrastructure is a significant issue.
5. A digital divide exists among students, affecting access to resources.

Figure 1: Graphical Representation of SWOT Analysis

Key Factors Affecting the Integrity of OBEs

To analyze university teachers' responses on the integrity of open-book examinations, the authors calculated the percentage and mean of the data. The findings are presented below.



Table 1: Perspective of University Teachers on OBEs

S.N	Statements	Mean
1.	Teachers' language proficiency significantly influences the quality of questions.	4.13
2.	Teachers face a challenge in accurately determining the difficulty levels of questions.	3.55
3.	Do you think that a teacher faces challenges in designing a wide range of objective questions?	3.48
4.	The use of reference books and study materials significantly adversely affects the smooth conduct of OBE.	3.60
5.	Open-book exams cause disorder and disciplinary issues in the examination room.	3.22
6.	Do you think that the absence of suitable reference books and study materials significantly hinders the implementation of open-book exams?	3.84
7.	Open-book exams pose a significant challenge to the role of invigilators.	3.59
8.	Mass copying poses a significant threat to OBE.	3.54
9.	Do you think that a teacher may facilitate cheating?	2.52
10.	An open-book examination is often deemed an inaccurate measure of a student's comprehension of the subject matter.	3.37

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11.	Teachers' personal bias may influence the evaluation pattern of open-book examinations.	3.36
12.	Do you think OBE is a method of assessment that is subject to change and can be subject to interpretation?	3.55
13.	The use of study materials and reference books can significantly reduce the quality of education.	2.81
14.	Open-book exams significantly impact students' understanding of the subject through clearer concepts.	3.41
15.	Do you think that the quality of education is compromised in the OBE system?	3.26

Source: Research Survey

Table 1 shows the perspective of university teachers toward the influential factors that affect the implementation of open-book exams. The analysis and interpretation of data against each item are presented below:

Statement 1: *“Teachers’ language proficiency significantly influences the quality of questions”* has a mean value of 4.13. It indicates that the majority of university teachers agreed that teachers’ language proficiency had an impact on the quality of their questions.

Statement 2: *“Teachers face a challenge in accurately determining the difficulty levels of questions”* has a mean value of 3.55. It indicates that a large section of participants accepted that university teachers face difficulty in identifying challenging levels of questions.

Statement 3: *“Do you think that a teacher faces challenges in designing a wide range of objective questions?”* has a mean value of 3.48. It indicates that many university teachers agreed that creating a wide range of objective questions is difficult.

Statement 4: *“The use of reference books and study materials significantly adversely affects the smooth conduction of OBE”* has a mean value of 3.60. It indicates that a majority of participants acknowledged that the use of reference books and study materials significantly hinders the smooth execution of exams.

Statement 5: *“Open-book exams cause disorder and disciplinary issues in the examination room”* has a mean value of 3.22. It indicates that a

sizable portion of participants agreed that OBE leads to chaos and disciplinary problems in the exam room.

Statement 6: *"Do you think that the absence of suitable reference books and study materials significantly hinders the implementation of open-book exams?"* has a mean value of 3.84. It indicates that many respondents believed that the lack of appropriate reference books and study resources severely hampers the implementation of open-book examinations.

Statement 7: *"Open-book exams pose a significant challenge to the role of invigilators"* has a mean value of 3.59. It indicates that the majority of university teachers agreed with the statement made.

Statement 8: *"Mass copying poses a significant threat to OBE"* has a mean value of 3.54. It indicates that a majority of university teachers agreed that widespread copying is a serious threat to OBE.

Statement 9: *"Do you think that a teacher may facilitate the cheating?"* has a mean value of 2.52. It indicates that a majority of participants are neutral about this statement.

Statement 10: *"An open-book examination is often deemed an inaccurate measure of a student's comprehension of the subject matter"* has a mean value of 3.37. This indicates that many respondents felt that OBEs are considered an unreliable indicator of a student's understanding of the subject matter.

Statement 11: *"Teachers' personal bias may influence the evaluation pattern of open-book examinations"* has a mean value of 3.36. It indicates that the majority of university teachers agreed that teachers' personal bias may influence the evaluation pattern of OBE.

Statement 12: *"Do you think OBE is an assessment technique that is flexible and open to interpretation?"* has a mean value of 3.55. It indicates that a significant proportion of university teachers thought that OBE is a flexible and open-to-interpretation assessment technique.

Statement 13: *"The use of study materials and reference books can significantly reduce the quality of education"* has a mean value of 2.81.

It indicates that more than fifty percent of the participants believed that using study materials might drastically lower the standard of education.

Statement 14: *“Open-book exams significantly impact students’ understanding of the subject through clearer concepts”* has a mean value of 3.41. It indicates that a majority of university teachers agreed with the statement made.

Statement 15: *“Do you think that the quality of education is compromised in the OBE system?”* has a mean value of 3.26. It indicates that a substantial number of participants felt that OBEs lower education quality.

Table 2: Perspective of University Teachers on Factors Affecting the Integrity of OBEs

S. N.	Factor	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
1.	Problems in test paper design	1.06%	16.67%	13.12%	47.52%	21.63%
2.	Administrative issues	4.61%	19.15%	11.35%	46.10%	18.79%
3.	Malpractice issues	9.22%	26.60%	14.89%	31.91%	17.38%
4.	Unreliable evaluation	4.26%	20.92%	15.96%	45.39%	13.48%
5.	Diminishing educational quality	9.57%	30.14%	10.28%	34.75%	15.25%

Source: Research Survey

Table 2 shows university teachers’ perspectives regarding factors affecting the open-book examination system. Based on the responses of 94 participants, a significant majority (69.15%) agreed that the test paper is a problem. Similarly, most teachers (64.89 percent) felt that administrative issues have an impact on the open-book exam system. Interestingly, less than half of the respondents were sure about malpractice being an issue. A considerable portion of the teachers (58.87 percent) also believed that OBEs lead to unreliable evaluation. However, there were mixed responses regarding the diminishing

quality of education. Overall, the analysis shows that university teachers largely agree that the integrity of open-book exams is most affected by issues related to test paper design, administrative issues, and unreliable evaluation. The perceived impact of malpractice and diminishing educational quality was moderate.

Conclusion

This paper provides a comprehensive SWOT analysis of open-book examinations (OBEs), examining their strengths, weaknesses, opportunities, and threats. By reviewing the existing literature, the study identified several key strengths, such as stimulating critical thinking, providing an engaging experience, preparing for the real world, reducing stress and assessing the application of knowledge. However, the study highlights significant weaknesses, such as challenges with time management, the risk of cheating, and a tendency toward surface-level learning. Additionally, weaknesses include a lack of quality instructional material, insufficient focus on student preparation, unfair assessment practices, and a need for better faculty training and question-framing templates.

The research also points out several opportunities, including the availability of digital textbooks, the use of ICT tools for setting question papers, promoting digital literacy skills, a computer-based system of examination and evaluation, better proctoring of online exams, and the availability of quality reference materials. The study identifies several key threats to the effective implementation of open-book examinations. These include the difficulty of designing questions that truly measure high-order critical thinking, challenges with organizing reference materials, and the digital divide among students due to a lack of ICT infrastructure and online resources. The analysis of university teachers' responses further reveals key factors that impact the integrity of OBEs, with significant issues related to test paper design, administrative issues, and unreliable evaluation. However, the malpractice and diminishing educational quality factors have a moderate impact on the integrity of open-book examinations.

Recommendations

The present study provides a detailed set of recommendations for optimizing the implementation of open-book examinations in India. A crucial first step is to provide students with advanced notice about the new format, emphasizing the need for a deep understanding of course material over simple memorization. To help students prepare, well-structured mock tests should be conducted to clarify learning objectives and expected academic outcomes. The assessment items must be intellectually stimulating and meticulously crafted to encourage students' analytical thinking. Additionally, ample time should be allotted for exams so students can formulate their responses thoughtfully. It is also important to avoid overly simplistic tasks, as they can increase the likelihood of plagiarism and collusion. Instead, incorporating a varied range of assessment tasks can enable students to exhibit their learning through diverse strategies.

A strong framework for implementing open-book examinations begins with faculty development. Training sessions need to focus on the skills needed to construct effective and meaningful assessments. Faculty should be encouraged to design questions that stimulate critical thinking by using real-world case studies or practical problem-solving scenarios, rather than relying on a single question type. Additionally, encouraging collaborative learning environments and integrating technology are key to enhancing the overall learning experience. To ensure a smooth transition, it's essential to establish clear guidelines and explicit evaluation criteria for students.

Lastly, the educators should promote a culture of academic integrity and encourage the students to engage in reflective practices that can significantly contribute to the development of metacognitive skills and foster a greater awareness of their own learning processes. Collectively, these measures ensure that open-book examinations are not merely a testing format but a valuable educational instrument that enhances student learning and development.

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