



Outcome-based education identifying determining factors in improving students learning achievement in higher education systems

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ABSTRACT

Education opens up numerous opportunities to record economic expansion worldwide, with specific reference to developing countries. Progress in educational indicators has been inadequate over the past few decades. Outcome-Based Education (OBE) has recently garnered significant attention in Indonesia. OBE is employed in education because it clearly focuses and organizes everything in the education system around what all students need to be able to do by the end of their learning journey. OBE proposes influential and engaging choices to transform and organize medical education. Therefore, the fundamental objective of this review is to highlight the higher education system and the need to transition from a teacher-centered system to an outcome-based education system. This review also discusses the key factors that influence student learning outcomes. The search strategies were designed by combining Boolean operators and key terms relevant to the review objectives. Five studies were included in the paper regarding the effectiveness of Outcome-Based Education in various educational disciplines. The findings suggest five important factors from the literature that influence student learning outcomes, including assessment strategies, learning objectives based on complexity levels, preferred learning styles of students, English language proficiency, and industry requirements.

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INTRODUCTION

It is not easy to transition from a traditional knowledge-based education (KBE) curriculum to the OBE method as it requires us to clearly identify outcomes and map those outcomes to the expected abilities of students. Firstly, providing guidance on the program and outlining the curriculum, then investigating the impact of OBE in two elective courses within the program, with the completion of one course being a prerequisite for entering another course (Rao et al., 2019). According to Padli

(2022) as cited in Haryani, OBE-based learning focuses on the student, with assessment emphasizing student performance through learning outcomes that consist of attitudes (affective), knowledge (cognitive), and skills (psychomotor). Among these learning outcomes, greater weightage is placed on what the students do (psychomotor aspect) when determining the grades (Dewi, 2023)(Crespo et al., 2010).

In Indonesia, the current education method still heavily focuses on input. The education system exposes students to the curriculum within a specific time period. At the end of the session, examinations are conducted, and grades are assigned to students, even though it is recognized that all students have achieved mastery of the material being taught. The methods or approaches that have been used in education thus far need to be reassessed and, if necessary, modified in order to meet the increasing demands for education (Putri, 2019). The outcomes not only achieve good results but also ensure a clear, focused, and organized education system centered around what all students need to be able to do by the end of their learning journey. Outcome-Based Education (OBE) has emerged as a primary direction for educational reform in the United States. Current-generation learners are not only interested in developing a theoretical foundation but also seeking an educational approach that also focuses on future job prospects (Sabarudin & Wan, 2010)

Outcome-Based Education (OBE) has recently garnered significant attention in Indonesia. OBE is employed in education because it clearly focuses and organizes everything in the education system around what all students need to be able to do by the end of their learning journey (Spady, 1994). Therefore, the fundamental objective of this review is to highlight the higher education system and the need to transition from a teacher-centered system to an outcome-based education system. This review also discusses the key factors that influence student learning outcomes. Furthermore, we aim to provide directions for future research. As outcome-based education is trending in Indonesia and there is a strong need to evaluate the factors affecting student learning outcomes, the current review offers a comprehensive overview of the overall theme.

This research has significant implications for the field of science. By conducting a literature review and analyzing case studies on the implementation of Outcome-Based Education (OBE) in various countries such as Hong Kong, the Philippines, Malaysia, and Indonesia, this research provides valuable insights into the effectiveness and challenges of adopting the OBE approach in different educational contexts. These findings can contribute to advancing the field by providing a comprehensive understanding, identifying success factors, highlighting possible challenges and solutions, and informing policy decisions and curriculum development. Thus, this research has the potential to enhance science education by promoting a student-centered approach that leads to the achievement of desired learning outcomes.

RESEARCH METHODOLOGY

The current learning methods still largely focus on input. The education system exposes students to the curriculum within a specific time period. At the end of the session, examinations are conducted, and grades are assigned to students, despite the fact that all students have achieved mastery of the material being taught. This perspective and approach in the education system need to be changed. The outcomes should not only achieve good results but also ensure a clear, focused, and organized education system centered around what all students need to be able to do by the end of their learning journey. Outcome-Based Education (OBE) has emerged as a primary direction for educational reform in the United States.

The current generation of students not only wants to develop a theoretical foundation but also seeks an educational approach that focuses on future job prospects (Sabarudin & Wan, 2010). This approach has gradually gained support from other countries as well. In South Africa, the OBE model was chosen and introduced due to its emphasis on factors such as problem-solving, idea generation, and skill acquisition aimed at developing clear thinking and competent citizens (Botha,

2002). Meanwhile, in Malaysia, the transition from a conventional teaching approach to a focus on student learning outcomes has ultimately become important and a significant feature that cannot be ignored (Mohayidin et al., 2008).

OBE is employed in education because it clearly focuses and organizes everything in the education system around what all students need to be able to do by the end of their learning journey (Spady, 1994). Educators worldwide have now realized that learning is not merely about delivering knowledge. It involves engaging the cognitive processes of the knowledge generation, greatly influenced by cultural, social, and emotional factors. The education system in Indonesia is still dominated by traditional teaching processes, where the prescribed curriculum is taught to students using conventional teaching methods.

Therefore, the fundamental objective of this review is to highlight the higher education system in Indonesia and the need to transition from a teacher-centered system to an outcome-based education system. This review also discusses the key factors that influence student learning outcomes. Furthermore, we aim to provide directions for future research. As outcome-based education is trending in Indonesia and there is a strong need to evaluate the factors affecting student learning outcomes, the current review offers a comprehensive overview of the overall theme.

Search Strategy

Two databases were searched, including Cochrane and Medline. A comprehensive search was conducted to retrieve missed articles through the databases, as well as unpublished gray literature. The search strategy was designed by combining Boolean operators and key terms relevant to the review objectives. The search terms used for Outcome-Based Education were "outcome-based education," "active learning approach," and "assessment outcome-based." Filters applied included the English language and literature published from 2014 to 2021. The articles included were those published in peer-reviewed journals.

Research Selection

The initial screening analysis was conducted by evaluating the titles and abstracts of the identified records, specifically focusing on topics related to Outcome-Based Education in universities worldwide. The purpose of this screening was to narrow down the selection to relevant articles. Subsequently, a full-text assessment of the articles was performed to determine their suitability for inclusion in the review. The final inclusion of studies was based on their relevance to the research objectives, and a qualitative synthesis was conducted. Throughout the screening and inclusion process, adherence to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines ensured a standardized and rigorous approach to selecting studies for analysis.

RESULTS AND DISCUSSIONS

A total of five (5) studies were included in the paper on the effectiveness of Outcome-Based Education in various educational disciplines conducted in different parts of the world, as indicated in Table 1. The main factors that can influence student learning outcomes were also analyzed and categorized into five important factors in developing countries. These themes include: learning objectives based on Bloom's Taxonomy, assessment methods, learning styles, and industry requirements for graduates. These themes will be discussed individually in the following sections.

Table 1.
Main factors influencing student learning outcomes

Authors	Location	Purpose	Study Design	Conclusion
(Dai et al., 2017)	Hong Kong	Evaluating the impact of Outcome-Based Assessment on the practical learning methods of students and instructors.	Quantitative	Outcome-Based Education significantly improves student learning outcomes and the teaching practices of faculty.
(Imelda I. An, 2014)	Philippine	To assess the effectiveness of OBE among students in relation to changes in their behavior and performance following the implementation of OBE strategies.	Descriptive study	From the findings generated, OBE instruction can be embraced and learned for a new education system regardless of age and gender. It serves every accounting student who is willing to adapt to the new curriculum.
(Tan et al., 2018)	Malaysia	To synthesize and summarize the best evidence evaluating the effectiveness of Outcome-Based methods on the competence levels of nursing students.	Systematic Review	Positive effects on nursing students' competencies were observed following OBE interventions. Improvements in knowledge acquisition, nursing skills, and attitudes were identified as key outcome measures.
(de Guzman et al., 2017)	Philippines	To understand the detailed concept of Outcome-Based Education and its implementation in technology.	Descriptive and Quantitative	Faculty members reported having mostly knowledge about OBE, particularly in the use of different techniques for assessing student learning, although there was a moderate level of knowledge regarding curriculum alignment and mapping and the construction of Program Educational Objectives (PEOs) across different colleges.
(Rahayu et al., 2021)	Indonesia	Investigating the components of outcome based Education in efl classroom: a lesson plan analysis	Qualitative	Schools require academic organization to align and adapt educational processes and systems according to desired educational outcomes.
(Bagban et al., 2017)	India	Discussing various innovative methods for student assessment.	Descriptive study	The combination of traditional assessment along with project-based assessment has aided in achieving course outcomes. The advantages and disadvantages of traditional assessment techniques and new approaches are also discussed. A survey on different methods was conducted, and the corresponding results are presented as well.

Review of Outcome Based Education

OBE proposes influential and compelling options for transforming and organizing medical education (Dai et al., 2017) and can be applied to other disciplines as well. The notion of accountability has proven to be one of the reasons for the rapid spread of various types of OBE in countries such as Malaysia, the United States, Australia, South Africa, and many others (Akir et al., 2012).

OBE is not just a preferred educational method but an essential component of education, particularly in the teaching and learning process. It emphasizes outcomes, where student achievements can be measured, validated, and improved (de Guzman et al., 2017). Some early effects and benefits of OBE include the formation of more organized, innovative, and adaptable teaching methods. For example, project-based learning will be promoted, and the development of professional attitudes and skills will be implemented. Furthermore, educational institutions always pay attention to and are vigilant about the quality of graduates they produce and introduce to the market.

OBE, like other concepts in education, has been explained in various ways, but its core concept remains the same: evaluating what is necessary to achieve and attain learning outcomes. The thinking behind OBE can be traced back to the early 1980s, and since then, curriculum design models have been developed and continuously refined (Balid et al., 2012). OBE can be described as a comprehensive teaching and learning method that emphasizes student performance and productivity at the end of the learning process. The core concept of OBE was developed by Spady, who made significant contributions in establishing the theoretical and foundational framework of OBE.

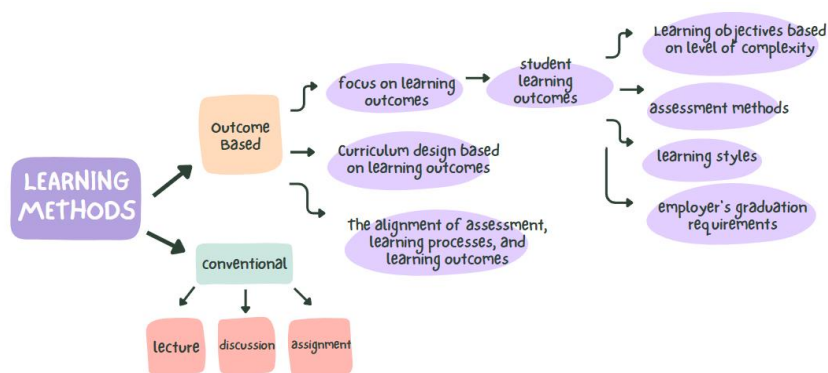


Figure 1. Mind mapping

The Learning Objectives based on the level of complexity

The Affective Domain of Bloom's Taxonomy considers the varying levels of simplicity to complexity in assessing the acceptance of phenomena, responding to phenomena, evaluating, organizing, and internalizing values (Krathwohl et al., 1964)(Batey & Hughes, 2017). Receiving is the lowest level in the affective domain, where students passively pay attention (Lu et al., 2020)(Lynn Lease, 2018). Learning is not possible without this level. The final domain of Bloom's taxonomy is the Psychomotor domain, which progresses from simple to complex levels, starting from perception assessment, set, guided response, mechanism, complex overt response, adaptation, and origination (Hoque, 2016) (Anderson et al., 2001).

Assessment Methods

Assessment can be categorized in various ways, and most of them are rational. One useful classification of assessment is based on its categorization as diagnostic, formative, or summative (Sukanti, 2011). Methods of assessing students that are related to and conducted before their exposure to educational interventions are known as diagnostic assessments (Indarti et al., 2015). The purpose of such assessments is to evaluate students' educational needs with the main goal of maximizing the learning process (Jaafar et al., 2010). Outcome-based assessment means that the assessment process should be aligned with the learning outcomes. This means it should support learners in their progress (formative assessment) and validate the achievement of desired learning outcomes at the end of the process (summative assessment). It also means that the assessment process should be adapted depending on the type of outcomes to be assessed (Jaafar et al., 2010)(Bagban et al., 2017).

Student assessment is an integral part of the teaching and learning process. To ensure effective learning, appropriate assessment techniques are applied. With the emergence of Outcome-Based Education (OBE), it is crucial to ensure that the intended course outcomes and subsequent program outcomes are achieved. Various assessment techniques are employed to evaluate different course outcomes (Bagban et al., 2017).

Employer Graduation Requirements

In a study on skills and graduate recruitment, it was found that the majority of financial service employers prioritize graduates based on their generic skills, motivation, flexibility, analytical skills, and overall qualities rather than their specific knowledge and core specializations. The strong demand from employers for generic skills and attributes has also been recognized through complaints expressed in literature over the past decade regarding graduates' lack of readiness for work and work experience (Pittaway & Thedham, 2005). Prihadi explains that vocational curriculum and learning should be continuously updated in accordance with the developments, changes, and innovations in the world of work to ensure that they are always linked and matched with the needs of the new job market (Rachmad Prihadi, 2019).

CONCLUSION

The primary objective of this review contributes to the field of education by evaluating the effectiveness of Outcome-Based Education (OBE) and identifying key factors that influence student learning outcomes. The emphasis on the role of educators in designing an optimal learning environment and promoting motivation, knowledge exchange, and feedback highlights practical considerations for implementing OBE. The review acknowledges the promising effects of the OBE approach on competency improvement, which further supports the case for its implementation. However, the limitations of the research include the need for future studies with larger sample sizes and rigorous methodologies to enhance the reliability and generalizability of the findings. The gaps in measuring outcomes and understanding implementation phases also provide opportunities for future research to develop comprehensive measurement tools and explore implementation strategies. Addressing these limitations and conducting further research will contribute to a more comprehensive understanding of OBE's effectiveness and its impact on educational practices and outcomes.

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