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Challenges and Recommendations for the Implementation of Outcome-Based Education: A Systematic Review

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ABSTRACT

Enhancing the quality of education through focusing on the outcomes of the educational process is an increasingly highlighted area in the field of education. Outcome-based education (OBE) has been considered as the best approach to enhance the quality of education, and it is implementing inserted of traditional teacher-centered content-based education approach in most educational reforms. Also, there are research findings about this change in the literature. It is important to explore challenges and recommendations for OBE implementation especially for 'those who are struggling with the same challenges' and 'who are planning for the same reforms.' The purpose of this study is to discuss challenges and recommendations for OBE implementation in previous literature. The 'conceptual content analyses' on phenomenological and case study-based recent research publications were conducted. PRISMA article selection process was employed to identify suitable research papers. Twelve research papers published in the last ten years fulfilled all inclusion criteria. These research papers were selected from 'Google Scholar', Emerald Insight' and 'SAGE' databases. Findings in both, challenges and recommendations were compiled under four categories. The first three categories: 'defining intended learning outcomes', 'deciding teaching-learning activities', and 'student assessment' were derived from the theory of constructive alignment. All other challenges and recommendations were discussed in the last category, 'general'. However, there are more improvements with the OBE. However, it should not be considered as a magic solution for all issues and should be implemented carefully because there are no chances to learn through mistakes in educational reforms.

Keywords: Outcome Based Education; Intended Learning Outcomes; Teaching Learning Activities; Student Assessment; Constructive Alignment

1. Background

Education is essential for people to survive and thrive. The quality of education is a vital aspect, and it is one of the sustainable development goals of the United Nations (United Nations, 2022). Similarly, it has been questioned in recent years (Wickramasinghe, 2018). According to Killen (2000), the quality of an educational system can be judged from three perspectives: the inputs to the system (focusing on resource allocation), what happens within the system (focusing on processes), and the outputs of the system (focusing on the results). All these aspects are equally important, and quality depends on all these aspects of the system. However, resource allocations and the education process had been concerns before, but the focus has shifted to the results in recent years as the quality of the education is reflected in the results or outcomes of the education (Mohammed & Sidek, 2016; Mohammed *et al*., 2022). Moreover, for the real value of education, it is necessary to address the contemporary issues of society (Oreta, 2014). Therefore, despite the location, most higher education systems are reforming to strengthen the connection among education institutions, industries, and society (Wickramasinghe, 2018), with the prime concern being the outcomes of the education system.

Traditional content-based education was the most popular education approach in the world. It was an approach to teaching and learning that focused on the transmission of knowledge from teacher to student. In this approach, the regular lecture-based semester, planned based on content such as textbooks, often concerns providing more materials without delay (Lubna & Harison, 2015; Kaliannan & Chandran, 2012). The focus of traditional content-based education is on the delivery of content. At the student assessment, it was expected to memorize and recall the content. Therefore, this approach encouraged students' reliance on their teachers (Mohammed *et al*., 2022; Mohammed & Sidek, 2016; Tam, 2014). It has been criticized because this approach does not accurately reflect what students learn (Lubna & Harison, 2016; Yu, 2016), and students frequently perform poorly during lectures (Kaliannan & Chandran, 2012). Also, this approach allows passive behavior from students in the classroom. Also, students do not know how to be active learners in the lecture and have relied on transcription, memorization, and repetition for learning. As opposed to that, students build knowledge rather than absorb it as it is communicated, building on the knowledge they have already acquired (Kaliannan & Chandran, 2012).

Due to the many shortcomings of the traditional content-based education approach (Yu, 2016), motivation for professional certification standards (Gunarathne, Senaratne & Senanayake 2020), and to enhance the quality of education (Asim *et al*., 2021), most educational institutions have shifted from the traditional content-based education approach to outcome-based education (OBE). OBE is more than writing and informing learners about educational outcomes. It primarily focuses on what is essential for all learners to be able to do because of education and then organizes all other aspects of the education system around desired learning outcomes (Spady, 1994). Educators and administrators design curricula, facilitate students' learning, and assess students' success in learning with a focus on desired educational outcomes (Killen, 2000). Also, it places more emphasis on the educational process than on the subject matter (Tam, 2014). Hence, the OBE approach shifts the center of the education system from the teacher to the student by changing the role of the teacher from subject matter authority to facilitator (Tam, 2014). Due to the importance of education and the significant differences between these two approaches, the shift away from the traditional teacher-centered content-based education approach to the student-centered OBE approach ought to be done in a methodical and well-considered way (Sarason, 1990). Tam (2014) has aptly noted that, when implementing OBE, caution must be taken to avoid conceptual reification and rigidity. If not, it can put further stress on educators, administrators, and learners as well (Senaratne & Gunarathne, 2019). Moreover, in managing educational reforms, there is no opportunity to learn from mistakes. Therefore, it is especially important to have a proper understanding of what the challenges are in the implementation of OBE and what factors need to be considered to make it a success.

Education reform and OBE have been researched in recent years. However, there are limited recent studies to describe the challenges and recommendations for OBE implementation. Therefore, exploring the challenges and recommendations for OBE implementation will contribute significantly both theoretically and empirically. Hence, it specifically addresses the following two research questions in this study:

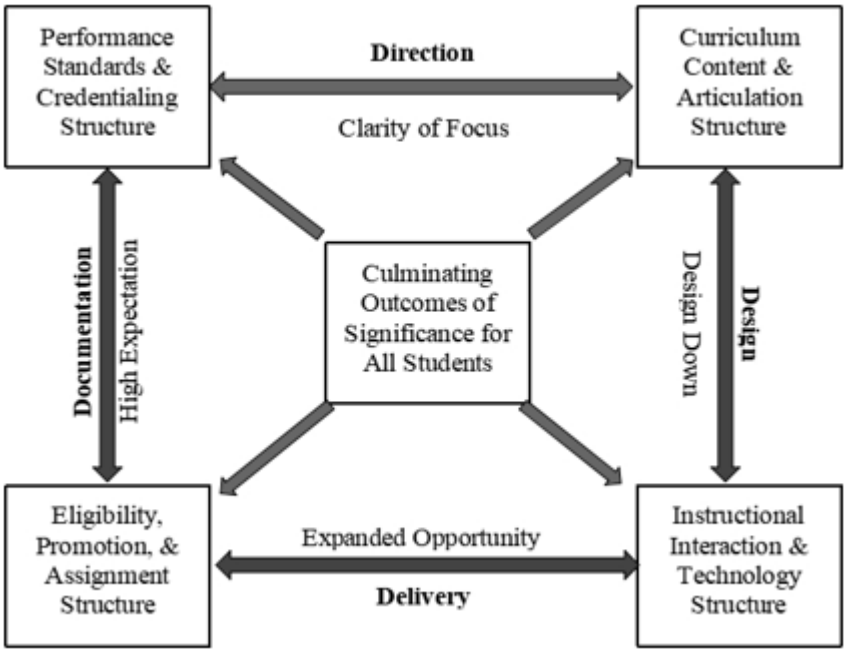
1: What are the challenges in the implementation of OBE?
2: What are the recommendations for the successful implementation of OBE?

In the following sections of this paper, a literature overview of OBE, methodology, findings, discussion, and conclusion will be presented. The methodology outlines the research design, the research process of data collection, and the method of data analysis. The Findings section outlines the significant findings of the study.

2. Literature Review

The concept of defining educational outcomes can be traced back to the 1960s and 1970s. During this period, there was a growing interest in specifying what students should learn and be able to do because of their education. Ralph Tyler's book "Basic Principles of Curriculum and Instruction" played a foundational role in emphasizing the importance of clear educational objectives and outcomes (Tyler, 2013). Tyler's work laid the groundwork for outcome-based education. However, Educational psychologist and sociologist William G. Spady is credited with founding the OBE approach. According to Spady (1994), 'everything in an educational system is organized and focused on what is necessary for all students to be able to do successfully at the end of their learning experiences' (p. 12). The central idea of Spady's definition is that OBE is a complete management system for education. It is basically guided to planning and organizing pedagogical process with the focus of student learning outcomes. All parties in the process, educators, students, and administrators need to concentrate their attention and efforts on the learning outcomes.

Figure 1: Outcome-Based Education Framework



Source: Spady, 1994, (p.23)

OBE can be identified as a systematic framework for education. The popular OBE framework was proposed by William G. Spady in 1994. According to Spady's OBE framework (see figure 01), there are four main structures namely *'Performance Standards & Credentialing Structure'*, *'Curriculum Content & Articulation Structure'*, *'Instructional Interaction & Technology Structure'*, and *'Eligibility,*

Promotion, & Assignment Structure'. Further, according to Spady's (1994) OBE framework, there are four operational functions, and it was guided by four operating principles of OBE and the operational functions are named; 1) direction setting (guided by the principle of clarity of focus), 2) program design (guided by the principle of design down), 3) delivery of instructions (guided by the principle of expanded opportunity), and 4) documentation of results (guided by the principle of high expectations).

Learning outcomes are the central aspect of OBE. It provides directions for curriculum content, teaching-learning activities (TLAs), and student assessments. Therefore, defining learning outcomes is the basic requirement for the direction setting. Learning outcome refers to the results expressed in terms of individual student learning (Kaliannan & Chandran, 2012, p. 54). Outcomes should be defined from the students' side. It is important to remember that the learning outcomes for OBE must be distinct and observable (Kaliannan & Chandran, 2012). The two approaches place different emphases on long-term, cross-curricular outcomes that are related to students' future life roles, such as being a productive worker, a responsible citizen, or a parent. The first approach places emphasis on student mastery of traditional subject-related academic outcomes (typically with a strong focus on subject-specific content) and the second, some cross-discipline outcomes (such as the ability to solve problems or to work cooperatively) (Kaliannan & Chandran, 2012). According to Ram & Ajay (2020) the crucial part of OBE is the taxonomy of learning, implemented to capture the best learning potential of a student. However, Fu-Lai Tony Yu (2016) argues that there should be space for unmeasurable outcomes in education.

One of the key components of the OBE framework is the 'curriculum content and articulation structure', which consists of programs, courses of study, subject areas, and courses. With this structure, the fundamental question of "how are the systems' formal learning experiences for students defined, organized, and linked?" is addressed (Spady, 1994). As cited in Kaliannan & Chandran, (2012), there are several factors that can be controlled in terms of curriculum design and implementation, including 1) the location of the instructional focus; 2) the length, frequency, and timing of learning time; 3) what learning is expected of whom and how it is rewarded; and 4) the structure of the curriculum.

'Instructional interaction and technology structure' is about tools and techniques the system uses to engage students in learning the curriculum (Spady, 1994). This structure includes the organization of TLAs and technologies for carrying it out. The TLAs are decided on student groups, schedules, placements, promotions, and advancements through the curriculum. This means, that the 'eligibility, promotion, and assignment structure'. Conversely, TLAs are interconnected with curriculum content and articulation structure as well. For the proper functioning of the OBE system, it is important to have the 'performance standards and credentialing structure' as well. This structure will determine how achievements and performance standards are defined and how graduation credit is awarded (Spady, 1994).

3. Methods

3.1 Research Design

Qualitative descriptive research design was employed to achieve the research objectives. In this research, a conceptual content analysis was conducted to describe the challenges and recommendations for the successful implementation of OBE.

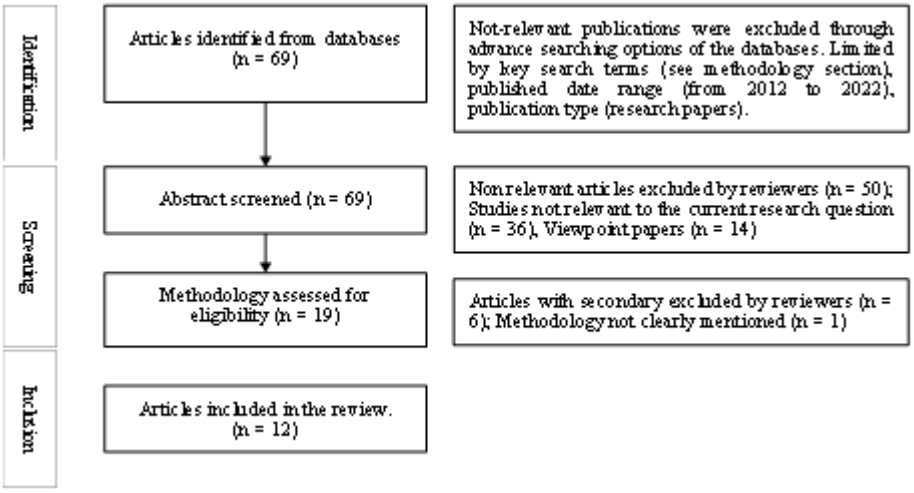
3.2 Research Process

The PRISMA article selection processes were followed. It applied to three stages; identification, screening, and inclusion (see Figure 2). In each stage, the articles that did not match the inclusion criteria were excluded. In the first stage of evaluating potential studies for inclusion, search study titles. Key search terms were "Outcome Based Education", "Issues of Outcome Based Education", "Success Factors for Implementation of Outcome Based Education", and "Adoption to Outcome Based

Education". These search terms were typed in the "Google Scholler", "Emerald Insights", and "SAGE Journals" databases and it was opened geographically. The inclusion criteria for searching the articles were the "research papers" published in "English" in "peer-reviewed journals" from "2012 to 2022" (recent 10 years). At the end of stage 1, 69 potential studies were found for the second stage.

According to the PRISMA flow diagram, the articles identified must be screened. The screening, retrieval, and assessment of the eligibility of each article were the tasks performed at the screening. The same research articles were removed after the first stage. Two sub-steps were followed in the second stage i.e., 1) abstract screening, and 2) methodology screening of the potential studies and they were conducted to determine inclusion. The inclusion criteria for abstract screening were the "research questions that should be directly related to the implementation or adoption of OBE". Due to its compatibility with the research questions, case study-based research was given priority at the second step of the screening stage (methodology screening). The inclusion criteria for methodology screening were the either "case study method" or "phenomenology approach". Fifty articles were excluded because either studies were not relevant to the current research questions (n = 36), or the methodology does not fit with the research questions (n = 14) or the methodology is not clearly mentioned (n=1). (Summarized in Figure 2).

Figure 2: PRISMA Flow Diagram (Article Selection Process)



Source: Author Construct

3.3 Method of Analysis

This research entirely depends on declarative knowledge. Conceptual content analysis was applied to analyze the content of the included research articles. This approach is well suited, when prior research exists about a phenomenon and further description is needed (Hsieh & Shannon, 2005), and to analyze the multifaceted data (Kim, Sefcik & Bradway, 2017). NVivo-11, qualitative data analysis computer software package was occupied to conduct the data analysis. The '*theory of constructive alignment'* is used to determine codes, categories, and themes.

3.4 Theoretical Framework

The Theory of constructive alignment is an educational theory developed by Professor John Biggs which is grounded on two aspects, 'constructive' and 'alignment'. The constructive aspect refers to the fact that 'students will construct knowledge by engaging in relevant learning activities' (Biggs, 1996). Learning can't be transmitted, and it should be constructed by the learner themselves. The teacher's role is noted by the second aspect of the theory. The term 'alignment' refers to teachers who should facilitate students' learning by aligning the teaching and learning activities with the Intended Learning Outcomes (ILO) (Biggs, 1996). Finally, the assessment tasks will assess the level of attainment of ILOs and then grades will be awarded.

To achieve the ILOs that result from a meaningful learning experience, the OBE approach, in combination with Biggs' *constructive alignment theory*, practically simultaneous consideration of the ILOs, the planning of suitable teaching and learning activities (TLA), and the proposed assessment (Tam, 2014). According to Biggs (1996), three major steps should follow, to keep constructive alignment. i.e.

1. Defining the ILOs.
2. Deciding TLAs expected to lead the ILOs.
3. Assessing students' attainment of ILOs (student assessment).

To address the research questions sub-categories were built based on the above three steps.

4. Results and Discussion

Data were categorized under two main themes, based on the research questions namely *'Challenges for the OBE'* and *'Recommendations for the OBE implementation'*. In the first section, four sub-categories were drawn from the theory of constructive alignment to respond to the study's first research question: i.e., *'Challenges in defining the ILOs', 'Challenges in deciding TLAs', 'Challenges in assessing students', and 'General challenges*.' Similarly, the second section was also organized under four subcategories to address the second research question. i.e., *'Recommendations for defining ILOs, 'Recommendations for deciding TLAs', 'Recommendations for assessing students', and 'General recommendations*.

4.1 Challenges in Defining ILOs

Defining Clear and Measurable ILOs: Many researchers (Gunarathne, Senaratne & Senanayake, 2020; Kaliannan & Chandran, 2012; Collins *et al*., 2015; Ram & Ajay 2020; Akir *et al*., 2012; Maleki, 2021; Kennedy and Birch, 2020; Syeed *et al*., 2022; Damith *et al*., 2021) have noted that it is difficult to specify measurable learning outcomes in the process of implementation of OBE.

4.1.1 Recommendations for defining ILOs

Define Specific ILOs: It is recommended that the development of a clear vision and followed by the establishment of SMART learning outcomes are the initial essential requirements for the successful implementation of OBE (Gunarathne, Senaratne & Senanayake, 2020; Kaliannan & Chandran, 2012; Collins, 2015; Ram & Ajay 2020; Damith *et al*., 2021). This will help to give educators a clear understanding of expectations related to what they plan.

4.2 Challenges in Deciding TLAs

Aligning TLAs with the ILOs: It was pointed out that aligning TLAs with OBE requirements is a significant challenge in deciding TLAs (Kaliannan and Chandran, 2012; Akir *et al*., 2012; Maleki, 2021). Overall, the text underscores the significant challenge of aligning teaching approaches with learning outcomes during OBE implementation.

4.2.1 Recommendations for Deciding TLAs

TLAs Aligned with the ILOs: It was recommended to decide the most applicable teaching method/s for the productive teaching-learning process in the context of OBE (Kaliannan and Chandran, 2012; Gunarathne, Senaratne & Senanayake, 2020; Collins, 2015).

4.3 Challenges in Deciding SATs

SATs Aligned with the ILOs: Gunarathne, Senaratne & Senanayake, (2020) found out that aligning what students learn and how they are tested is important for OBE to work. Many studies (Gunarathne, Senaratne & Senanayake, 2020; Collins, 2015; Ram & Ajay 2020; Premalatha, 2019; Akir *et al*., 2012; Ganesh, 2016; Maleiki, 2021; Kennedy and Birch, 2020; Syeed *et al*., 2022; 2013) pointed out the challenge of matching examination procedures with learning outcomes.

4.3.1 Use of Fair and Reliable SATs

Use of Fair and Reliable SATs: Premalatha (2019) investigated the use of outcomes assessment methods in OBE to evaluate student learning. One of the difficulties in evaluations is making sure they are fair and accurate.

4.3.2 Recommendations for Deciding SATs

SATs Aligned with the ILOs: The research papers noted that the assessment method/s needs to be aligned with the ILOs (Gunarathne, Senaratne & Senanayake, 2020; Collins, 2015; Ram & Ajay 2020). *Use a Variety of Assessment Methods:* The research papers recommended using a variety of SATs to ensure that all ILOs are being measured (Syeed *et al*., 2022; Gunarathne, Senaratne & Senanayake, 2020).

4.4 General Challenges

Getting Buy-In from Stakeholders: It has been reported by many studies (including Ram & Ajay 2020; Kaliannan and Chandran, 2012; Gunarathne, Senaratne & Senanayake, 2020; Collins, 2015; Permalatha, 2019; Ganesh, 2016; Akir *et al*., 2012; Maleki, 2021; Kennedy and Britch, 2021) that stakeholder approval should be sought before putting into practice OBE. Involving important stakeholders in the creation of learning outcomes and in the design of assessments to see how well they have learned.

Lack of Resources: Gunarathne, Senaratne & Senanayake, (2020) found that implementing OBE can be resource-intensive, as it requires time and effort to develop learning outcomes, assessments, and other materials. Also, the study highlighted the importance of planning and allocating resources effectively to ensure that OBE is implemented successfully. Also, the studies (Akir *et al*., 2012; Maleki, 2021; Syeed *et al*., 2022) highlighted that this is one of the challenges in the process of implementing OBE.

Lack of Supportive Environment: Maleki (2021), Damith *et al*., (2021), highlighted the lack of supportive environment is one of the major challenges to implementing the OBE. This includes factors such as good infrastructure, adequate resources, and a safe learning environment.

Managing Educators' Workloads: Damith *et al*., (2021) note that before adopting the OBE educators were burdened with a heavy workload in the vocational colleges in Malaysia. The study further highlighted that the adoption of OBE, has added more workload to educators, and managing this heavy workload is a challenging task.

Ambiguities of Implementation Guidelines: Damith *et al*., (2021) found that many educators are not familiar with the concept of OBE and how to implement it in their teaching. This has led to confusion among educators about what they are supposed to be teaching and how they are supposed to be teaching it.

Unstable System Implementation: Damith *et al*. (2021) noted that there is a lack of stability in the OBE system. The paper uncovered that these unstable conditions of OBE implementation led to problems

such as students not being able to progress through the curriculum smoothly and teachers not being able to get the support they need.

Changing the Culture of the Institution: OBE requires a shift in the culture of the institution, away from a focus on teaching and towards a focus on learning. Damith *et al*. (2021) highlighted that this cultural change is challenging, as it requires educators and staff to change their mindset and their approach to teaching and learning.

4.5 General Recommendations

Have Clear Shared Vision: The first step is to develop a clear vision for what OBE should look like in the engineering program. It is recommended to share this vision with all stakeholders, including students, teachers, and employers (Syeed *et al*., 2022; Gunarathne, Senaratne & Senanayake, 2020; Collins, 2015). This can be helpful to get involvement from the stakeholders. *Phased Implementation:* Kaliannan and Chandran (2012), Collins (2015), Maleki (2021) recommended to start implementing OBE with small courses or programs, and then gradually expanding the implementation to other courses and programs. This will allow for the challenges to be identified and addressed as the approach is scaled up.

Get Buy-in from Stakeholders: Crucial to the success of OBE is stakeholder engagement in its development and execution. Underscoring the importance of stakeholder support, Gunarathne, Senaratne & Senanayake, (2020), Collins (2015), Syeed *et al*. (2022), Kaliannan and Chandran (2012), Ram & Ajay (2020), Premalatha (2019) emphasized securing this before implementing OBE. Stakeholders, both in the creation of ILOs and TLAs and SATs development, must be involved.

Train Educators: Syeed *et al*. (2022), Gunarathne, Senaratne & Senanayake, (2020), Kaliannan and Chandran (2012), Collins (2015), Premalatha (2019), Maleki (2021), and Damith *et al*. (2021) recommended that providing professional training and development for educators on how to implement OBE. This training should help educators to understand the principles of OBE and to develop the skills and knowledge they need to implement the approach effectively.

Be Flexible and Adaptable: OBE is an ongoing process. It is evolving continuously with the changes in the world. Syeed *et al*. (2022), Gunarathne, Senaratne & Senanayake, (2020), Collins (2015) recommended to be flexible and adaptable when implementing the OBE approach. This means being willing to make changes to the approach as needed.

Be Patient: Kaliannan and Chandran (2012) noted that implementing OBE takes time and effort. The paper highlighted the importance of being patient and persevering, even when challenges arise. Also, Collins (2015) highlighted the importance of being patient and persevering, even when challenges arise.

Regular Review: Damith *et al*. (2021), Kaliannan and Chandran (2012), Premalatha (2019), Maleki (2021), recommended that the implementation of OBE should be continuously evaluated and improved. The studies uncovered that this evaluation would help to ensure that the program is meeting the needs of students and stakeholders.

Use Technology: Kaliannan and Chandran (2012), Collins (2015) Maleki (2021) noted that technology can be used to help with the implementation of OBE. It also highlighted the usability of technology for creating interactive learning experiences, providing feedback to students, and to collect data on student learning. Challenges and recommendations can be summarized as shown in Table 01.

Table 1: Challenges and Recommendations of Implementation of OBE

Codes	Challenges	Recommendations
Defining the ILOs	- Defining Clear and Measurable ILOs	- Define Specific ILOs
Deciding TLAs	- Aligning TLAs with the ILOs	- Develop TLAs that are Aligned with the ILOs
Assessing students	- Develop Assessment Methods that are Aligned with the ILOs - Make Sure that the SATs are Fair and Reliable	- Develop SATs that are Aligned with the ILOs - Use a Variety of Assessment Methods
General	- Getting Buy-In from Stakeholders - Lack of Resources - Lack of Supportive Environment - Managing Educators' Workloads - Ambiguities in OBE Implementation Guidelines - Unstable System Implementation - Changing the Culture of the Institution	- Start with Clear Shared Vision - Phased Implementation - Get Buy-in from Stakeholders. - Train Educators - Be Flexible and Adaptable - Be Patient - Regular Review - Use Technology

Source: Autor Construct

5. Conclusion

Many practical challenges can be seen in the pedagogical shift from traditional content-based education to the OBE system. This system is heavily dependent on ILOs. Learners will construct their own knowledge when teachers are facilitated by aligning their TLAs and assessment tasks with ILOs. The main challenging task of OBE implementation is defining clear and measurable ILOs. Aligning TLAs and SATs with the ILOs is another main challenge in teaching learning and student assessments which were identified from previous studies. Some recommendations to avoid the above challenges were also discussed in previous studies. Finally, it can be concluded that there are more improvements with the OBE. However, it should not be considered as a magic solution for all issues in education and should be implemented carefully because there are no chances to learn through mistakes in educational reforms.

6. Declarations

6.1 Conflict of Interest: Not applicable.

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