



# **A Comprehensive Exploration of Outcome-Based Education Principles and Practices**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## **ABSTRACT**

The concept of Outcome-Based Education (OBE) has become a paradigm shift in the field of education by placing a strong emphasis on student accomplishment and measurable learning outcomes. This study undertakes a thorough investigation of OBE practices and concepts, exploring its impact on pedagogical techniques, implementation strategies, and theoretical underpinnings. The paper tackles the essential elements of OBE, such as curriculum design, evaluation techniques, and the alignment of educational objectives with societal demands, by synthesizing recent literature and case experiences. In addition, the research critically analyzes obstacles and possible remedies related to OBE adoption, taking into account various educational environments. This thorough analysis fosters a deeper knowledge of OBE's implications for reshaping education by providing educators, policymakers, and academics with important insights into the complex environment of OBE.

*Keywords: Outcome-based education; Metacognitive strategies; EFL.*

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## 1. INTRODUCTION

Information and communication technology (ICT) advancements have permeated numerous industries, including education, particularly learning. By using e learning, students will have access to online learning at any time and from any location [1]. To put it another way, distance learning can be considered as a synonym for electronic learning (e-learning), which is defined as the use of technology to connect people with one another and/or with educational resources for the goal of education (formal or informal) [2].

The authors (Rout, Mishra, and Routray, 2018) discussed the necessity of implementing an OBE system. The study included the interested eighth semester engineering students who were chosen and took part in the senior project. Ten students from the IIIT Bhubaneswar, India, Department of Electrical Engineering Program were among the selected student population. In the lab course known as "Automation and Control Lab," authors (Pulavarthi et al., 2017) from the Department of Electrical Engineering, RIT, Sangli, India, deployed the OBE system. There were sixty final-year students in the student population that was chosen for the research. The OBE method was implemented by the authors (Misra and Priyadarshini, 2018) in the CVRCE Information Technology program in Bhubaneswar, India. Four cohorts of undergraduate batches, each with 180 students, were compared in the study.

The Washington Accord's prerequisite for certification, outcome-based education (OBE), claims to raise the bar for the aforementioned crucial components and enhance the technical education system. Originally, the Washington Accord was created by six nations to measure and identify procedural equivalencies throughout the accreditation process [16,17]. Other nations have joined the pact since it was formed in 1989, including India, bringing the total number of members to 25 at this time (Kootsookos et al., 2017). The primary issue of the diminishing employability ratio and the requirement for improving the caliber of engineers at the local level makes a thorough investigation and use of efficient OBE necessary. There has not yet been a thorough analysis of research publications on the methodology and quantitative evaluations of OBE in engineering education.

Regarding on outcome based education Students' grasp of the problem stated, solution planning, confidence in and personal control of

problem-solving behavior and emotions were improved by a metacognitive-based approach [3]. Higher degrees of problem solving success would be achieved by utilizing sophisticated cognitive and metacognitive processes [4]. In order to produce self-reflective students, teachers should cultivate students' metacognitive abilities in conjunction with other cognitive abilities. Students should aware of how they learn do better in school. Also, metacognitive skill encourages and promotes reflective thinking, as well as builds self-confidence and self-awareness, both of which are necessary for making good judgments [23,28]. Metacognitive activities represent a multidimensional concept with three self-regulation components, namely planning, monitoring, and assessment, (PME) or the students have known their positive role in learning which is what we're mostly interested in this research [5,18]. Metacognition plays a significant role in whether or not a problem solving effort is a success. Numerous studies have found, however, that kids are under-exposed to it and have poor metacognitive skills as a result.

## 2. METHODS

This research used qualitative method. This research is a descriptive quantitative study with survey design. The researcher uses online questionnaire to get the data. The statement/questions of questionnaire is about integrating outcome-based education in the classroom. The study carried out in a faculty teacher training and education faculty students with 77 students EFL third semester students in academic 2021 year. Survey was delivered to all of the students but 24 accepted to reply (11 students from Indonesia language department, 21 students from English department. The research data were collected from students' perceptions on how practical outcome-based education on mobilizing student's metacognitive activities based on Cetin [6,12] Indicators; planning, monitoring and evaluating (PME) obtained was based on the data after teaching. The questionnaire of metacognitive activities in the classroom modified from Cetin [6] concept on List 1.

## 3. RESULTS

The results of research based on the data from students responded showed that the students really enjoyed the class which is including outcome-based education during the class. On the Table 1 showed 41,7% or 10 respondents

strongly agreed category, 33,3% or 8 respondents agreed category and 20,5% or 6 of them neutral category the result suggested most of the respondents enjoyed in zoom class.

The second statement students felt comfortable integrating outcome-based education as their virtual class. As shown above on Table 1, 33,3% respondents stated they felt comfortable, 41,7 % respondents agreed category, 16,7% were neutral and while 8,3% took the disagree option. Many benefits come with integrating outcome-

based education to do online instruction using some platforms. Based on the data on Table 1 surveyed say they can readily improve focus in learning; 20% of respondents strongly agreed category, 40% of respondents agreed and 36% of respondents in neutral category.

The fourth statement in this survey ask respondents whether online learning via zoom help respondents easy to learn content or materials, activities and interaction support in zoom class showed 24 % of respondents

**List 1. Metacognitive activities in the classroom**

| <b>Metacognitive Indicators Activities</b> |  |   |  |
|--|--|---|--|
| Planning                                   | Students have planning thinking about how to gain information in the online class  | Students understand the problems and have strategy to recalling materials in the online class                       | Students easier to recalling the idea (making prediction) of whether or not the problems had been solved once before in the online class                                   |
| Monitoring                                 | Students easy to thinking about checking the suitability of the concept from content, focus in learning and interaction used to solve the problems in the online class | Students easy to controlling the calculation accuracy of information step by step, develop confidence in the online | Students easy to checking the suitability of the materials, engaged in the discussion, interaction with classmates and lecturer also produce new information in the online |
| Evaluation                                 | Students easy to repeating several steps if an error occurs in the online class  | Students have new strategy or new idea, sharing idea in answering question in the online class                      | Students understand the materials, active response, feedback and make conclusions in the online class  |

**Table 1. Participants responses on planning**

| <b>Items</b>   | <b>Responses</b>         |                 |                |              |                       |
|--|--------------------------|-----------------|----------------|--------------|-----------------------|
|  | <b>Strongly disagree</b> | <b>Disagree</b> | <b>Neutral</b> | <b>Agree</b> | <b>Strongly agree</b> |
| I enjoyed classess which is included outcome-based education   |                          | 4.5%            | 20,5%          | 33,3%        | 41,7%                 |
| I felt comfortable learning which is included outcome-based education                                  |                          | 8,3%            | 16,7%          | 41,7%        | 33,3%                 |
| The integration outcome-based education improves my learning focus                                     |                          | 4.2%            | 33,3%          | 41,7%        | 20,8%                 |
| The use of outcome-based education helps me to learn content and assists me engagement and interaction |                          | 8,3%            | 12,5%          | 54,2%        | 25%                   |
| The use of outcome-based education helps me to develop confidence in learning                          |                          | 12,5%           | 20,2%          | 33,3%        | 20,5%                 |
| The use of outcome-based education helps my enhance my learning skill                                  |                          | 13%             | 13%            | 34,8%        | 39,2%                 |

strongly agreed category, 52% of respondents agreed, 16% of respondents Neutral category and 8% were disagreed which mean using this form allows the educator and the educated to engage more easily. When attending a live lecture, students can see and hear eye movement as well as hear other students' voices This means that students and professors can see each other's gesticulations, therefore it's a multimodal experience. The integration of outcome-based education has also encouraged students to use their smartphones instead of computers, which has the potential to reduce weariness.

On Table 1 showed the data in online class class respondents felt confidence and easy to understand the materials; 20% of respondents strongly agree, 32% of respondents agree, still 28% of respondent's neutral category and 16% of respondents were disagree. In addition, on Table 1 showed participants acquire a better understanding and effective enhanced learning in online class 33,3% of respondents strongly agree, 37,5 % agree category, 16,7% neutral category and 12,5% disagree. Its indicating participants have a lot of advantages to using online video conferencing.

The integration of outcome-based education motivated participants to actively participate in class activities, giving feedback, discussion and sharing ideas showed on Table 2. In this condition, participants in the input-elaboration-output stages of their own thought processes and can utilize models to better organize their own thought processes and learning in online class 28% of respondents strongly agree, 28% of respondents agree, 32% neutral and 8% of respondents were disagree category.

Critical thinking and problem-solving skills showed when participants engage in discussion and easy to sharing ideas. Here, the results showed the integrating outcome-based education made it easier for participants to be more engaged in the class discussions 16% of respondents strongly agree, 40% of respondents agree, 32% neutral and 12% disagree. Respondents metacognitive skill indicated on the statement the use of outcome-based education which is integrated metacognitive skills increased respondent's interaction orally or via chat with instructor and respondent's classmates with 6 subject (24%) stating they strongly agree, 48% of respondents agree and 24% were neutral category.

**Table 2. Participants' responses on monitoring**

| Items   | Responses         |          |         |       |                |
|---|-------------------|----------|---------|-------|----------------|
|   | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| The integration of outcome-based education motivated participants to actively participate in class activities, giving feedback, having discussions, and sharing ideas.  | 8%                | 29,2%    | 29,2%   | 29,2% | 29,2%          |
| The use of outcome-based education made it easier for participants to be more engaged in the class discussions.   | 12,5%             | 29,2%    | 41,7%   | 16,7% |                |
| The integration of outcome based education increased respondent's interaction orally or via chat with instructor and respondent's classmates  |                   | 20,8%    | 50%     | 25%   |                |
| The integration of outcome-based education increased respondent's interaction orally or via chat with instructor and respondent's classmates  | 8%                | 16,7%    | 41,7%   | 29,2% |                |
| I felt comfortable learning which is including outcome-based education during online class more than google meet, WhatsApp video call meeting, Skype, Stream yard and the traditional face-to-face class meetings | 12,5%             | 20,8%    | 37,5%   | 25%   |                |
| I felt comfortable interacting during online because the activities motivated respondent to learn the class content more than the ones in the traditional face-to-face class meetings                             | 12,6%             | 29,2%    | 41,7%   | 16,7% |                |

Respondents felt comfortable integrating outcome-based education during online class more than google meet, WhatsApp video call meeting, Skype, Stream yard and the traditional face-to-face class meetings. The good point of zoom then another platform were 28% of respondents strongly agree, 44% of respondents agree, 16% of respondent's neutral and 8% of respondents disagree. In addition, respondents felt comfortable during online because the activities during the class motivated respondent to learn the class content more than the ones in the traditional face-to-face class meetings 25% respondent stating they strongly agree, 37,5% agree, 20,8% neutral and 12,5% disagree. The participants also felt It was easier to participate in group activities in the sessions in comparison to the traditional face-to-face class meetings 16,7% of respondents stating strongly agree, 41,7% agree, 29,2% neutral and 12,6% disagree showed on Table 2

Reference as Table 3 in question respondents metacognitive activities they were easy to understanding the problems during the class in the zoom of as shown above 4 (16,7%) respondents strongly agree category, 8 (33,3%) respondents agree category, 10 (37,5%) neutral category and 3 (12,5%) were disagree. Because metacognitive thinking skills are

closely linked to other higher-order thinking skills, this suggests that students' metacognitive thinking skills should be developed and empowered; this can be seen during the learning process where students' ability to answer questions about critical thinking skills is good in other words, they can formulate the main problems and reveal the facts. In addition, on Table 3 showed respondents easy to recalling the idea of whether or not the problems had been solved once before during the class of 25% respondents strongly agree category, 41,7% agree, 16,7% neutral and 16,7% were disagree.

Based on the data on Table 3 these findings suggest that students in use metacognition skills to help them learn recalling the ideas. Students will benefit greatly from this because it will help them better understand abstract topics that are notoriously tough to grasp. The majority of students develop their own metacognition abilities on their own. On the other hand, it's something that must be repeated practice The teacher's involvement is critical in helping students improve their metacognition skills through the use of effective learning tactics and approaches in teacher training and education faculty.

**Table 3. Participants' responses on evaluation**

| Items  | Responses         |          |         |       |                |
|--|-------------------|----------|---------|-------|----------------|
|  | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| I was able to easily understand the problems during the class, which are integrated metacognitive skills as a part of outcome-based education. |                   | 12,5%    | 37,5%   | 33,3% | 16,7 %         |
| It was easy to recall the idea of whether or not the problems had been solved once before during the class.                                    |                   | 16,7%    | 16,7%   | 41,7% | 25%            |

**Table 4. Participants' responses on evaluation**

| Items  | Responses         |          |         |       |                |
|--|-------------------|----------|---------|-------|----------------|
|  | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| It was easy to think about checking the suitability of the concept from the content used to solve the problems during online learning. |                   | 8,3%     | 33,3%   | 37,5% | 20,8 %         |
| It was easier to think about repeating several steps if an error occurred.   |                   | 12,5%    | 25%     | 50%   | 12,5%          |
| I enjoyed having a final project, which is   |                   | 8,3%     | 33,3%   | 41,7% | 16,7%          |

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about a project as part of outcome-based education.

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The statement on Table 4 asking whether respondents easy to thinking about checking the suitability of the concept from content used to solve the problems during online learning via zoom apps, 20,8 % of respondents strongly agree, 37,5% respondents agree, 33,3% neutral and 8,3% were disagree. Its showed respondents are able to monitor and appraise anything learned, they had used their metacognition skill optimally. On table 3 asking respondents online class by using zoom app it was easier for respondents to thinking about repeating several steps if an error occurs, 12, 5 % of respondents strongly agree, 50% of respondents agree, 25% of respondent's neutral and 12,5 % were disagree. The question on Table 4 asking respondents to thinking about trying another way, if an error occurs in the online session, 16,7% strongly agree, 41,7% agree, 33,3% neutral and 8,3% disagree. The findings show respondents of English depattment during online learning in zoom class can be controlled by metacognitive activities also they were correcting if there are errors that occur during understanding concept and making corrections if mistakes are made when grasping a subject.

#### 4. DISCUSSION

The participants in this segment participated in the classroom by integrating outcome-based education, their knowledge and views about it were highly positive, based on the result of survey. It indicates that they demonstrated their readiness and willingness to apply OBE-SCL in their courses and that they are sufficiently knowledgeable about related topics. To help everyone mentally prepare for the shift, they initially concentrated on the mindsets of the administrative personnel, teachers, and students', [7,8,9].

We wanted to find out how online learning applications were in empowered EFL students metacognitive skill, how lecturer manage their online class with metacognitive activities and whether any findings would be useful to EFL investigators and English skills. This investigation was conducted to find out.

The term "metacognitive capabilities" refers to three different types of skills: planning, monitoring, and Evaluating (PME), [10,12,13]

Steps in the guided inquiry learning paradigm had mirrored features of metacognitive competence. Planning parts of metacognitive skills include identifying and defining the problem, developing a hypothesis, and formulating a solution strategy (such as designing experiments). In guided inquiry learning, parts of metacognitive skill are monitored by conducting experiments, observing and collecting data, and analyzing that data. Metacognitive ability evaluation factors include making inferential inferences during the inquiry phase. This demonstrates how guided inquiry can be utilized to boost students' metacognitive abilities by integrating with metacognitive strategy [15,8].

According to many research, the adoption of metacognitive methods could be a substantial and more practical strategy for increasing students' learning abilities. The results also showed that despite the training, students still require additional training on how to effectively use brainstorming or mind mapping approaches to generate their ideas, as evidenced by the information they supplied. On the other hand, they reported in another instance that prior to this instruction, they had no idea how to structure their idea from visualizing, listening, to writing, from writing to reading then to speaking in English because metacognitive helped them be more organized in their preparation.

Marks, symbols, and keywords are all approaches they are said to be employing, along with a focus on the primary elements of how they connect to form of their English skills Students that participated in the program's monitoring revealed that they become more self-reliant as a result of being better able to keep tabs on their EFL class processes and progress. It also reflects on how students might check their writing's creation, speaking performance and comprehension processes through self-questioning and revision strategy. Studies such as North Central Regional Educational Laboratory, [9,13,14] claim that monitoring can assist students better grasp their difficulties and how to overcome them. Participants are asked about their experiences with self-assessment, self-evaluation, and reflective practice as part of the evaluation approaches.

As part of the preparation phase, students examine their ideas to determine what prior knowledge they have that will assist them in completing the work. Students also determine what steps need to be taken first to aid completion of the task, and they organize their time management accordingly. Metacognitive skills sheets require students to apply their prior knowledge to assist them complete the job at hand. According to [19,20,22]. Prior knowledge refers to the skills and knowledge pupils have acquired while studying the subject matter.

In addition, students know and determine what things need to be done first in order to complete the assignment when working on the metacognitive skills challenge. As evidenced by the timeliness with which students collected answers about metacognitive skills, they have also planned their time to work on the metacognitive skills inquiry. When completing assignments, students must use planning skills as well. Student will ask themselves what material should be understood depending on the questions and the time needed for the solution Sun, [10,21] as long as they plan (planning skills). Students monitor their activities (their monitoring skills) to see if they are on the correct track in solving problems, remembering vital information, and checking to see if they are. As long as the student keeps track of the problem, he or she will question themselves what knowledge is relevant to remember and what action to take to resolve it.

The learner can also choose the next steps to take to solve the problem based on the information found in the question. Student checks conformity between what is known and the processes utilized to address the problem when evaluating activity (evaluation skills). Inquiring minds want to know how well they've done in solving the challenge, [24,25]. It can be deduced from the way students explain their reasoning for choosing the solution stages based on prior knowledge. It is in line with research was conducted by Solikhah [11], he revealed that with careful implementation and an emphasis on student learning, OBE has the potential to develop an educational system that is more flexible, adaptive, and student-centered. To overcome the difficulties and guarantee its effectiveness in various educational contexts, it necessitates meticulous preparation, clear communication, and ongoing development.

## 5. CONCLUSIONS

When the abundance of data offered in this investigation of OBE is combined, it is clear that the paradigm's focus on quantifiable results and student accomplishment has a big impact on how education is shaped. OBE has the potential to improve the caliber and applicability of education in a variety of circumstances, as demonstrated by its theoretical underpinnings as well as insights from real-world applications and case studies, [26,27]. The findings of this investigation add to the ongoing discussion about OBE as the educational environment changes and call for more study, cooperation, and creativity to improve and maximize its application. By doing this, the education community may collaborate to develop an educational paradigm that is more student-focused, outcomes-driven, and responsive for the benefit of both the present and the future generations. To improve the attitudes of educators in the Indonesian context, PDCs (Program Development Centers) and other centers should strongly support the structure of intensive training workshops that share the overall goals of Outcome-based education and its professional development with all faculty members. These types of training must be conducted by qualified personnel, especially OBE master trainers and trainers, since they may impart several methods for fully executing the strategy.

According to [29,30,31], who also discussed the possibilities of OBE in a larger global perspective, higher education institutions must adjust to the outcome-based education system due to the continuing economic revolution that the expansion of market needs such kinds of standardized indicators and international accreditations measures that higher educations need to implement.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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