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Study on Outcome based Education

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Abstract

The researcher's objective is to review and reconcile the research papers on ***Outcome-based Education*** *in* ***higher studies****. The final result of higher education is being analyzed.* ***Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines*** *have been used to analyse this paper.* ***Mixed Methods Appraisal Tool (MMAT)*** *has been used to assess the selected research studies in terms of quality of the research methodology. 19 related primary studies have been identified and analyzed since 2000. Such research illustrated outcome-based education in higher education.*

Keywords: Higher Education, Outcome-based education, Learning Outcome, Quality Education, PRISMA, MMAT.

Introduction

An outcome based education (OBE) model is student centric. OBE's vital objective is to provide students with the necessary knowledge, skills and attitude in such a manner, so that they are able to perform the assigned tasks successfully in their professional careers after completion of their higher studies. In higher education institutions, the concept of Outcome-based Education (OBE) has been introduced internationally. Several countries like United States, Canada, New Zealand, and Australia have implemented OBE.

OBE focuses on noticeable and assessable outcomes resulting from the student's performance during and after completion of the program. The bases of curriculum are to understand, analyze, and apply in the professional life. The OBE curriculum begins with what students should know after graduating the programme, alongwith clear cut instructions, and assessment at teachers' end to ensure that learning should actually occurs.

Literature review

Bloom's advocacy of mastery learning movement (Bloom, 1968) had already indicated that
"every learner will master desired outcomes if educators refashion the time and instructional
parameters in which learning takes place."

Killen (2000) defines two types of key outcomes. The first includes frequently calculated performance indicators in terms of test results, completion rates, post-course work, and so on. It also stresses learner mastery of learning outcomes / content related to the conventional subject and some cross-disciplinary outcomes (such as problem solving or working together). The second is less tangible and, as a result of their education, is usually expressed in terms of what the learners know and can do. This emphasizes long-term, cross-curricular outcomes relevant to the learner's future life roles (such as being a productive worker, a responsible citizen, or parent).

Many countries are in the process of reforming their education system and structure to meet the challenging demands of the industry for skilled graduates. Some politicians are also advocating for OBE (Malan, 2000; Alderson and Martin, 2007).

In addition to teaching and learning activities, evaluations used in OBE classrooms should be constructively aligned with the results expected to be demonstrated successfully at specific stages and curriculum levels (Biggs, 2011; Biggs & Tang, 2007).Spady (1994) from Faculty of Education and Arts, University of Newcastle, Australia has described four principles of OBE which direct the educators and academic leaders in its

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implementation. The efforts of shifting to OBE can be almost guaranteed when applied consistently, systematically, and creatively. These principles are explained here below:

Clarity of focus: It states that educators have to focus specifically on what they want students to know, understand and be able to do. In other words, teachers will focus on helping students build the knowledge, skills and personalities that will enable them to achieve clearly articulated outcomes.

Expanded opportunity:
Teachers will strive to provide all students with expanded opportunity. This principle is based on the idea that, in the same way and at the same time, not all students will learn the same thing. Nonetheless, if sufficient opportunities ar e offered, many students will achieve high expectations.

High expectations:
It means teachers should place high, challenging performance standards to encourage students to deeply engage in w hat they are learning. The idea that positive learning promotes more
successful learning is very closely linked to helping students to achieve high standards.

Design down:
This means that the development of the curriculum will start with a clear definition of the expected results to be reac hed by the end of the program. Once this is completed, all instructionaldecisions will then be made to ensure that the desired result is achieved.

Objectives of the Study

The research study tends to achieve the following objectives:

1. To understand the concept of Outcome based education (OBE)
2. To identify the gaps between the concept of OBE, and its implementations.
3. To suggest improvements on the basis of this research

Research Methodology

This study is based on Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. These criteria provide for systematic and open meta-analysis and evaluation (Liberati, Tetzlaff, & Altman, 2009). PRISMA checklist contains 27 items related to a systematic review and meta-analysis content. This method is used to ensure the quality of the chosen research papers under the analysis. Both quantitative and qualitative papers have been analyzed in this meta-analysis. Although the qualitative techniques have some limitation, but they also have few advantages. Qualitative analysis is free from the error of calculation generally found in survey studies (Dana, Leo Paul, Dana, Teresa E., 2005). Since it was a meta-analysis review and was not focused on any primary data analysis, the researcher ensured the reliability of the analysis by following the PRISMA guidelines

Selection Criteria

The selection criterions can be summarised in the below table 1:

	Included	Excluded
Type of Publication	Research Articles	News articles, Blogs, Editorials,

	Included	Excluded
		other guideline documents
Time Period of Publication	2012 to till date	Before 2012
Language of Publication	English Language	Non- English Language
Quality of Publication	Papers published in Peer Reviewed Journal	Papers published in Non Refereed, Non Reviewed Journals
Research Approach	Any primary data based research design/method, related to Outcome based Education	Any secondary data based research design/method
Condition of Interest	Outcome based Education in Higher studies only	Other than Higher studies
Outcome	Any Quantitative or Qualitative study establishing/testing relationship	Research studies not accompanied by feasibility report/data.

Table 1: Selection Criterions

Based on these criteria, various research papers were selected. The selected papers were based on various research methodologies and research design.

Search Procedure

To find out relevant research studies, different repositories such as SAGE, Scopus, Elsevier, Taylor and Francis were searched. All the research papers that have been published since 2012 have been selected whose title, keyword or abstract consist terminologies like outcome base education, higher education, quality education. Researcher admits that selection of research papers based on these selected keywords could have resulted in the elimination of a few studies that specifically studied the Outcome based education.

Data Analysis Method

This study is based on recommendations from **PRISMA**. These guidelines provide for methodical and transparent meta-analysis and review (Liberati et al., 2009; Moher, Liberati, Tetzlaff, & Altman, 2009). PRISMA guidelines suggested that all research studies should be assessed in terms of the quality of the research methodology for each systematic review. **Mixed methods analysis approach** (Pace et al., 2012) has been used for this purpose.

Study design	MMAT assessment criteria (Pace et al., 2012; Souto et al., 2015)
Qualitative	1.1 Qualitative objective or question 1.2 Appropriate qualitative approach or method 1.3 Description of the context 1.4 Description of participants and sampling 1.5 Description of data collection and analysis 1.6 Discussion of researchers' reflexivity
Randomised controlled experimental	2.1. Clear description of the randomization (or an appropriate sequence generation) 2.2. Clear description of the allocation concealment (or blinding when applicable) 2.3. Complete outcome data (≥ 80%) 2.4. Low withdrawal/drop-out (< 20%)
Non-randomised experimental	3.1 Recruitment in a way that minimised confounders 3.2 Intervention and control group comparable 3.3 Evidence of an absence of contamination 3.4 Complete outcome data (≥ 80%)/acceptable response rate (≥ 60%).
Observational descriptive*	4.1 Appropriate sampling and sample 4.2 Justification of measurements (valid or standard) 4.3 Acceptable response rate (≥ 60%).
Mixed methods	*To evaluate the qualitative component of the study:* Use criteria 1.1–1.6 above. *To evaluate the quantitative component of the study:* Use criteria 2.1–2.4, 3.1–3.4, or 4.1–4.3 above, according to the quantitative design. *To evaluate the use of mixed methods:* 5.1 Combination of qualitative and quantitative data collection or analysis approaches 5.2 Justification of the mixed methods design 5.3 Integration of qualitative and quantitative data or results

Figure 1: MMAT Assessment Criteria List

The Mixed Methods Appraisal Tool (MMAT) is an assessment tool used to assess the quality of the systematic review of research articles. The reviewed research studies must be observational in nature in compliance with the MMAT guidelines and these research studies can be qualitative research studies, quantitative research studies, and mixed-method research studies. This tool evaluates the quality of the research studies by categorizing the research studies into the following five categories: qualitative research, randomized controlled studies, non-randomized studies, quantitative descriptive studies, and mixed methods. There are few related methodological quality criteria in each of these categories. Each research paper under this study has been awarded a score for each relevant criterion (on the basis of yes or no). The formula to calculate the quality score is given here below:

$$\frac{\text{Total Number of 'Yes' Scores}}{\text{Total numbers of relevant criterias}} \times 100$$

Figure 2: Formula of MMAT

Results and Discussion

A total of 77 research articles have been identified, only 42 of which have been retained as 35 research articles were duplicate. Furthermore, these 42 papers were screened on the basis of selection criteria (mentioned above), and after this screening only 16 were selected. Just seven papers have been retained after reviewing the full text of these 16 research articles and seven research articles have been omitted. It was not possible to locate the full text of 2 research articles.

Origins of the literature

Below chart is showing the origination of literature of selected research studies geographically.

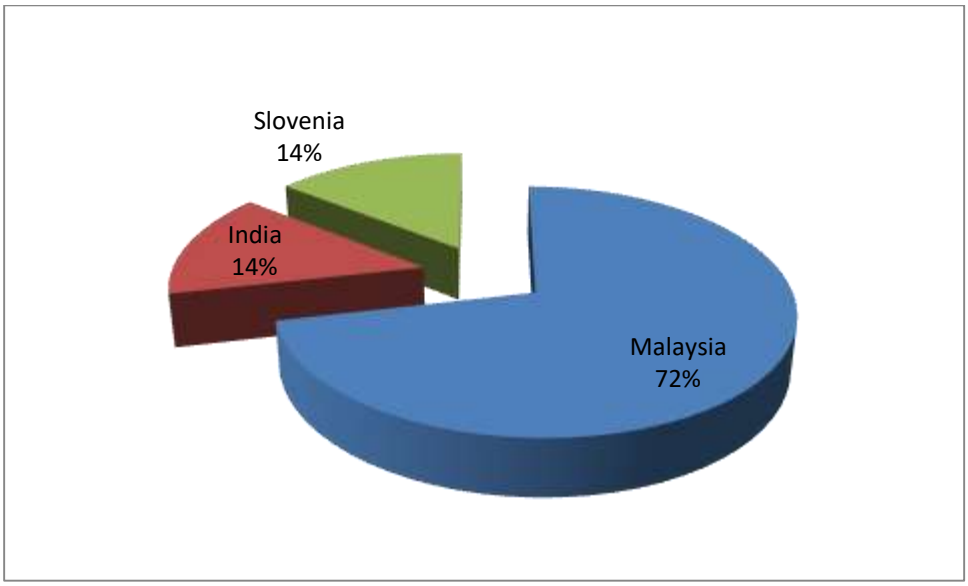

Figure: Chart showing origin of Literature

Research design

Variety of research designs and research methods are characterised in these selected 7 research papers. The summary of all the research designs and research methods is mentioned in Table 1:

Research Methods	Research Design			
	Associational	**Associational, Longitudinal**	**Experimental**	**Total**
Quantitative	4	0	0	**4**
Qualitative	3	0	0	**3**
Mixed Method	0	0	0	**0**
Total	**7**	**0**	**0**	**7**

Table 2: research Design of Current Studies

Sub-constructs investigation and Literature Reviews supporting them

Various sub-constructs were identified while conducting Thematic Analysis of Outcome base education i.e. Clarity of focus, expanded opportunity, high expectations, design down (Table 3).

Construct	Sub construct	Meaning of Sub construct	Meaning studied/utilized in Literature under study	Authors details
Outcome based Education	Clarity of focus	Educators have to focus specifically on what they want students to know, understand and be able to do	1. Learner's performance 2. Practice	1. Valerie Ross (2012) 2. Rosdiadee Nordin, A. Ashrif A. Bakar,

				Nashruddin Zainal, Hafizah Husain (2012)
	Expanded opportunity	Sufficient opportunities should be offered so all students will learn and understand	1. All students learn 2. Students participation	1. Tang Howe Eng, Oriah Akir and Senian Malie (2012) 2. Rosdiade e Nordin, A. Ashrif A. Bakar, Nashruddin Zainal, Hafizah Husain (2012) 3.
	High expectations	Helping students to achieve high standards	1. Integrating industrial talks and visits	1. Rosdiade e Nordin, A. Ashrif A. Bakar, Nashruddin Zainal, Hafizah Husain (2012)
	Design down	Curriculum will start with a clear definition of the expected results t o be reached by the end of the pro gram	1.Course outcome 2. Learning outcome 3. Learning outcome 4. Learning outcome	1. Oriah Akir, Tang Howe Eng and Senian Malie (2012) 2. Khanna R and Mehrotra D (2019) 3. Zorka Novak Pintaric and Zdravko Kravanja (2016) 4. Valerie Ross (2012)

Table 3: List of the Sub-Constructs, its meaning, and literature supporting them

Further, the frequency of various research studies related to each sub-construct was identified. This analysis is shown in below **Figure**.

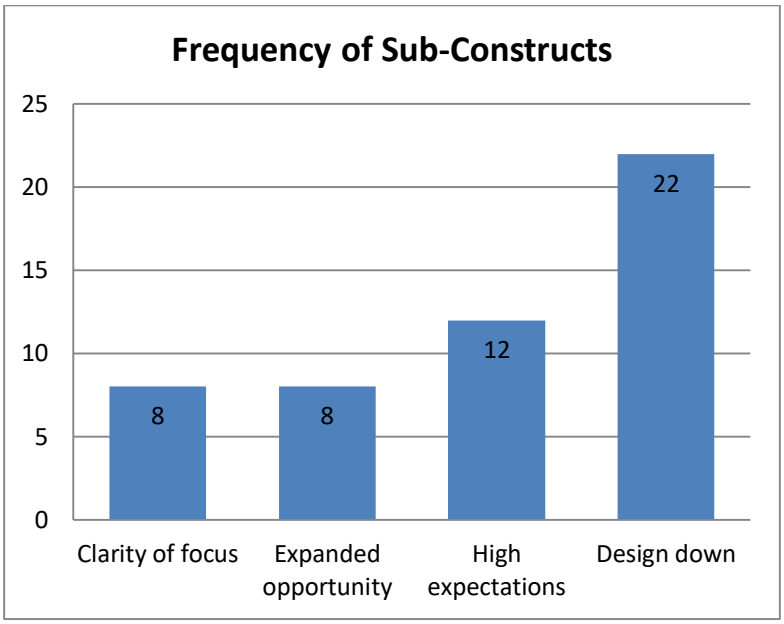

Figure5: Frequency of Sub-Constructs

Quality assessments

The quality of research studies reviewed in the current study was evaluated using MMAT criteria. The MMAT score of each study is summarised in table 4. 71% of the research studies fulfilled all the criteria of MMAT checklist, while only 29% of the studies had 67% score on MMAT criteria.

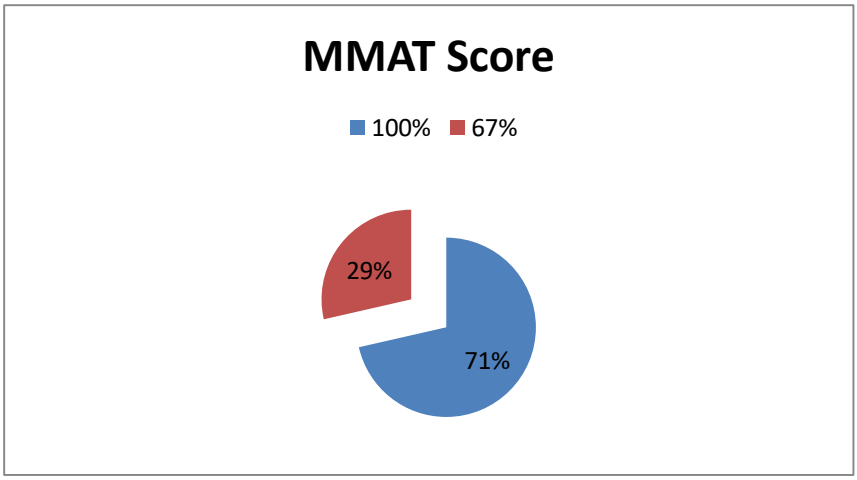

Figure: MMAT Score of research studies

Table 4: Details of the Research Studies: Author Details, Year, Country, Research Design, Research Method, Sample Size, MMAT Score

Sl. No.	Author Details	Country	Sample Size	Research Method	Research Design	Missing Criteria	MMAT Score
1	Oriah Akir, Tang Howe Eng and	Malaysia	244	Quantitative	Associational	-	100%

	Senian Malie (2012)						
2	Khanna R and Mehrotra D (2019)	India	-	Qualitative	Associational	1.4, 1.5	67%
3	Tang Howe Eng, Oriah Akir and Senian Malie (2012)	Malaysia	250	Quantitative	Associational	-	100%
4	Zorka Novak Pintaric and Zdravko Kravanja (2016)	Slovenia	-	Qualitative	Associational	1.4, 1.5	67%
5	Valerie Ross (2012)	Malaysia	15	Qualitative	Associational	-	100%
6	Rosdiadee Nordin, A. Ashrif A. Bakar, Nashruddin Zainal, Hafizah Husain (2012)	Malaysia	46	Quantitative	Associational	-	100%
7	Baba Md Deros, Azah Mohamed, Norhamidi Mohamed, Ahmad Kamal Ariffin Mohd Ishan (2012)	Malaysia	120	Quantitative	Associational	-	100%

Implication, Limitations, and Future Research

The findings of this research may be useful to higher educational institutions to understand the concepts of OBE and its implementations. It was observed that majority of the researches have talked about the curriculum design, but focus on other parameters of OBE is not yet completely implemented. Therefore, the objectives of OBE would not be achieved. If we talk about India, OBE is still in its infancy stage, though, University Grants Commission has taken up the step forward.

Literature which supports higher studies only has been included in this research based on different countries. Finding may switch if large number of literature reviews have been studied. Status of OBE not included about India as no literature was found out.

Future research would be carried out with use of statistical techniques and with the help of primary data. Research may focus on particular specialization in higher studies.

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