

OUTCOME BASED EDUCATION (OBE) EXECUTION IN POLYTECHNIC EDUCATION SYSTEM IN TAMILNADU- A REVIEW

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Abstract – This paper reviews the present scheme of polytechnic education under Directorate of technical education (DoTE), Chennai, its pitfalls and explains execution of outcome-based education (OBE) system in polytechnic colleges in TamilNadu in order to ensure every student is competent in theoretical knowledge and practical skills thereby improving the quality of polytechnic education and make it a learner centric education system.

Key Words: Outcome based education (OBE), polytechnic education system, Directorate of technical education (DoTE), Rubrics

1. INTRODUCTION

The mission of polytechnic education system is to diversify technical education and to reach mass by attracting learners from lower income families, who aspire technical education and need immediate employment on completion of the program. Hence the priority of polytechnic education system aims to develop students with high degree of theoretical knowledge and practical skills with high rate of employability.

The traditional polytechnic education system mainly operates as per the curriculum prescribed by Directorate of Technical education (DoTE) from time to time, as of now, M-Scheme.

The learner can choose the program only and flexibility, freedom in learning based on their interest in the course is not possible. But the modern-day learners need freedom and flexibility in learning, which is achieved through by executing OBE in polytechnic colleges in TamilNadu.

When OBE system is executed in polytechnic colleges in TamilNadu, every student will be assessed based on the well-defined program outcome (PO) and course outcome (CO).

1.1 PRESENT POLYTECHNIC EDUCATION SYSTEM

The present curriculum prescribed by Directorate of technical education (DoTE) is M-Scheme. In this every course is divided into two-parts (i) Theory and (ii) Practical.

For both theory and practical continuous internal assessment for 25 marks and board examinations for 75 marks, in total, 100 marks.

In case of practical, the student must secure 10 marks in continuous internal assessment and 35 marks in board practical examination. For the conduct of practical examination, question papers for every individual student is generated by system as per the course curriculum and is password protected. It can be unlocked and downloaded using the password sent to the external examiner's mobile on the day of examination only, which was already uploaded in the DoTE online portal.

This methodology ensures that all the students study all experiments prescribed in the course without skipping any difficult experiments. This also ensures quality of learner with prescribed skills in that course.

In case of theory, the student must secure 10 marks in continuous internal assessment and 30 marks in board theory examination. The question paper is prepared by most senior faculty members as per the scheme prescribed by DoTE. The scheme of theory question paper is given below,

PART -A

- (i) 2 marks for each question
- (ii) Contains 8 questions (1 to 8)
- (iii) Question number 8 is compulsory and can be from any of the 5 units
- (iv) Students must answer 5 questions in total
- (v) 5 questions X 2 marks = 10 marks

PART-B

- (i) 3 marks for each question
- (ii) Contains 8 questions (9 to 16)
- (iii) Question number 16 is compulsory and can be from any of the 5 units
- (iv) Students must answer 5 questions in total
- (v) 5 questions X 3 marks = 15 marks

PART-C

- (i) 10 marks for each question
- (ii) Contains 5 questions (17 to 21) in either or pattern
- (vi) 5 questions X 10 marks = 50 marks

In total 75 marks.

1.2 PITFALLS IN PRESENT POLYTECHNIC EDUCATION SYSTEM

The board theory question paper is prepared as per the present scheme (M-Scheme) and the examination is conducted. Every student can pass the theory examination, if he scores 10 marks in continuous internal assessment and 30 marks in board theory examination (or) if his continuous internal assessment marks is below 10 marks, that shortage of marks must be obtained in board theory examination. Which is illustrated in table-1

Table -1: Result declaration in present polytechnic education scheme

BOARD THEORY EXAMINATION RESULT			
CONTINUOUS INTERNAL ASSESMENT MARKS	BOARD THEORY MARKS	TOTAL	RESULT
10	30	40	PASS
5	35	40	PASS
0	40	40	PASS
9	30	39	FAIL

From the above Table-1, we can come to conclusion that, a student can pass the theory examination even without scoring a single mark in continuous internal assessment, since he has scored 40 marks in board theory examination. This nullifies the purpose of continuous internal assessment system incorporated in the curriculum. This is the major pitfall in the present polytechnic education system.

Further, as per the present polytechnic education scheme, a student must score 30 marks out of 75 marks. There is no assurance that the student has answered questions from all the five units, which means, a student can skip the unit(s) which he felt difficult but can still pass the examination. This implies a diploma holder may not have the necessary knowledge and his professional competency is in question. This will dent his employability factor sometimes loss of job. This problem must be addressed immediately.

2. OUTCOME BASED EDUCATION (OBE)

Employability of a diploma holder depends on the knowledge and practical skills. The present polytechnic education scheme ensures that the diploma holder have the required practical skills. But it cannot be said in case of theory examination. This problem can be eliminated by executing outcome-based education (OBE) in polytechnic in TamilNadu.

In OBE, the outcomes on completion of course - called course outcome (CO) and program -called program outcome (PO) are clearly defined and achieved. OBE encompass knowledge, skill, personality traits, graduate attributes and ensures every student attains the benchmarked level of skill sets on completion of every course and program, such that the program outcome (PO) and course outcome (CO) is achieved. For every course, many numbers of course outcomes (CO) are identified and benchmarking level is set on cognitive, psychomotor and creative domains of learning based on past data available.

Execution of OBE in polytechnic education system is explained below with an illustration

Course: Refrigeration and air-conditioning applications

Course code: RACA04

Benchmarking:

- (i) 40% of 75 marks as course outcome in total, which is 30 marks
- (ii) Since a course has five units, 5 course outcomes are identified as CO1, CO2, CO3, CO4, CO5
- (iii) Weightage for course outcome 20% of 75 marks, which is 15 marks
- (iv) Minimum benchmarking for every course outcome is 20% of weightage on every course outcome, which is 3 marks

To summarize, on executing OBE in polytechnic education system in TamilNadu, in order to pass a course, student must secure a minimum of 3 marks out of 15 marks in every course outcome (in this case there are 5 CO) and in total he has to secure 40 marks in total, if not, he will not pass in that particular course. This is illustrated in Table-2

Table -2: OBE execution in polytechnic education in TamilNadu pass/fail declaration of course RACA04 in board theory course.

SL NO	RACA04 COURSE OUTCOMES					TOTAL (40)	RESULT
	CO 1 (3)	CO 2 (3)	CO 3 (3)	CO 4 (3)	CO 5 (3)		
1	3	12	3	20	3	41	PASS
2	3	3	3	3	3	15	FAIL
3	10	3	20	2	17	52	FAIL

Case-1: In this case, the student has secured benchmarked minimum mark of 3 in every course outcome and in total 41 – hence pass.

Case-2: In this case, the student has secured benchmarked minimum mark of 3 in every course outcome and in total 15. He has not secured benchmarked minimum of 40 in course-hence fail.

Case-3: In this case, the student has secured benchmarked minimum mark of 3 in every course outcome except in CO4

and in total 52. He has not secured benchmarked minimum of 3 in all course outcome- hence fail.

Execution of OBE in polytechnic education system for continuous internal assessment for a theory course is explained below with an illustration

Course: Refrigeration and air-conditioning application

Course code: RACA04

Benchmarking:

- (i) 40% of 5 marks as an average of continuous internal assessment test 1 and 2
- (ii) 40% of 5 marks in continuous internal assessment for model exam
- (iii) 40% of 5 marks for assignment content
- (iv) 40% of 2.5 marks for seminar content
- (v) 40% of 2.5 marks for seminar delivery
- (vi) 40% of 5 marks for attendance

To summarize, on executing OBE in continuous internal assessment in polytechnic education system in TamilNadu, in order to get a minimum 10 marks in every course, student must secure a minimum of 2 marks as an average of CIA1 and 2, 2 marks in model exam, 2 marks in assignment content, 1 mark for seminar content, 1 mark for seminar delivery and 2 marks for attendance, in total 10 marks out of 25. This is illustrated in Table-3

Table -3: OBE execution in polytechnic education in TamilNadu for continuous internal assessment marks declaration of course RACA04.

AVERAGE OF CIA 1 & 2 (2)	2	1
MODEL EXAM (2)	2	3
ASSIGNMENT CONTENT (2)	2	3
SEMINAR CONTENT (1)	1	2
SEMINAR DELIVERY (1)	1	2
ATTENDANCE (2)	2	5

Case-1: As we read from second column, the student has secured the benchmarked minimum marks and his total continuous internal assessment marks is 10 out of 25 – he is fit to appear for board theory examination.

Case-2: As we read from the third column, the student has secured more marks than the benchmarked minimum marks, except in average of CIA 1 & 2. Even his total score is more than 10, he is not fit to appear for board theory examination,

since he has not secured benchmarked minimum of 2 marks in the average of CIA 1 & 2.

3. STEPS IN EXECUTING OBE IN POLYTECHNIC EDUCATION IN TAMILNADU

A step-by-step procedure for executing OBE in polytechnic education system is given below

- Step1 – Framing institution’s Vision and Mission
- Step2 – Framing Department’s Vision and Mission
- Step3 – Develop program outcome (PO)
- Step4 – Mapping of PO’s to institution’s Vision and Mission along with that of Department’s Vision and Mission
- Step5 – Assessment

Step1 – Framing institution’s Vision and Mission

This is a clear statement of purpose, ethical values and future perspective of institution.

Step2 – Framing Department’s Vision and Mission

This pertains to specific department and program. This should be inline with that of institution’s mission and vision.

Step3 – Develop program outcome (PO)

Program outcomes (PO) are formulated based on the inputs and surveys from industry and professional bodies, accordingly course curriculum is designed.

Step4 – Mapping of PO’s to institution’s Vision and Mission along with that of Department’s Vision and Mission

The benchmarked program outcome (PO) and course outcome (CO) are mapped with institution and department’s vision and mission. Benchmarking is done based on past data, institution culture, community nature.

Step5 – Assessment

The students are assessed with well defined expected outcomes with clearly established rubrics. This is illustrated table-4

Table -4: OBE RUBRICS execution in polytechnic education in TamilNadu for continuous internal assessment marks declaration in theory course RACA04.

Sl. No	Criteria	Scale (25)	Domain level
1	Average marks in CIA 1 & 2	2 out of 5 marks	Cognitive
2	Model Exam	2 out of 5 marks	Cognitive

3	Assignment content	2 out of 5 marks	Cognitive/HoTs
4	Seminar content	1 out of 2.5 marks	Cognitive
5	Seminar delivery	1 out of 2.5 marks	Cognitive
6	Attendance	2 out of 5 marks	Affective
	Total	10 OUT OF 25 MARKS	

4. CONCLUSION

Based on this review, we can conclude that on executing outcome-based education (OBE) in polytechnic education system in TamilNadu, will ensure every diploma holder will have a benchmarked knowledge and skill sets and make him more employable. OBE also makes diploma holder ethical and creative. OBE will play an important role in eradication of unemployment as the curriculum encompass all the requisites by the society and industry.

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- [2] OBE-A REVIEW
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