

A Review of Calculating Course Outcomes Attainment for NBA Accreditation of Polytechnic Institutes

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Abstract: *In Indian higher education system quality of education in institutes evaluates by external independent body such as National Board of Accreditation (NBA). It was initially established by the AICTE (All India Council of Technical Education) under section 10(u) of AICTE Act, in the year 1994, in order to assess the qualitative competence of the programs offered by educational institution from diploma level to post-graduate level in engineering and technology, management, pharmacy, architecture and related disciplines, which are approved by AICTE. for NBA accreditation educational institutes needs to prepare many off-based documents as per given criterion[1]. This paper is focuses on criterion 3 of the Self-Assessment Report of NBA in which course outcomes (CO) and program outcomes (PO) attainment needs to calculate. It is necessary for each faculty member of an Institution to know the method by which PO and CO attainments are calculated so that CO and PO attainment will be calculated. Based on this, the faculty members must then identify the lacking areas of the course they are teaching and must improve upon these areas during the course of a semester or in the next turn of teaching the same course.*

Keywords: Course outcome, Program outcome, self- assessment report, Accreditation

I. INTRODUCTION

Presently there are two central bodies responsible for accreditation in Indian higher educational institutes, the National Accreditation Assessment Council (NAAC) and the National Board of Accreditation (NBA) [6]. For NBA Accreditation, every institute should follow the guidelines and rules given by NBA. Through the process of accreditation, an agency evaluates the quality of a specific educational program of a higher education institute, in order to formally recognize it as having met standards. The result of this process is usually the awarding of a status of recognition to conduct educational programmes within a time-limited validity. specific educational program will be accredited for three years or five years. NBA accreditation is outcome-based process. Program outcomes (PO) are set by NBA. Presently seven program outcomes defined by NBA which mapped with course outcomes. These POs are mapped with course outcome and Co-Po mapping along with attainment value calculation done. Target is set by institutes for each course and CO attainment values are computed with set target. Suppose set targeted value and CO attainment values of any course have found some gap then action need to be taken to bridge that gap. Hence NBA process is said to be continuous improvement process. Each and every time institutes program gets chance to improve their education quality.

II. NBA ACCREDITATION PROCESS

Educational institutes are accredited for specific program. For this purpose, institutes need to fill pre-qualifier in which some essential qualifier must be cleared then only institutes are eligible for NBA Accreditation. In pro-farma for Pre-Qualifiers, institutes have to fill two parts. First part is consist of Institute profile whereas part second contains program information [3]. After this institute has to prepared self- assessment report (SAR). It consist of total nine criterion each has some marks of weightage. Out of nine criterions first seven are based on program level and eight, nine are based on institute level. NBA has set some objectives to accomplish quality process. The process of accreditation helps in realizing a number of benefits, such as helps the institution to know its strengths, weaknesses and opportunities, institutions can initiate to use innovative and modern methods of pedagogy. It provides institutions a new sense of

direction and identity [1]. The main purpose of the accreditation by NBA is to promote and recognize excellence in technical education in colleges and universities at both the undergraduate and postgraduate levels—through accreditation.

III. METHODOLOGY

Following processes are considered to find the attainment of Course outcomes.

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- Direct Attainment: For direct attainment two internal Class Test results & Board results are consider as per MSBTE norms.
- Indirect Attainment: Indirect attainment is based on Course exit survey.
- Internal Class Tests and Micro Project:
- Two Internal Class Tests are conducted in each semester.
- These tests are conducted as per teaching examination scheme and MSBTE schedule
- Sample question papers are provided by board for each subject.
- Course outcome of the subject are taken into Consideration while setting up the question Paper.
- After answer paper assessment the attainment of Course, Outcome is calculated and compare with set standard.
- Based on the above calculations the attainment levels are calculated.
- In this I scheme two Internal Class Tests of 20 marks each are conducted and 10 marks are assigned for micro project.
- Micro project (I Scheme):
- For every course one micro project is planned to be undertaken by group of students.
- Course outcome is calculated by determining the number of students having met the set standard.
- Continuous assessment:
- Candidate is assessed continuously for experiments/practical activity.
- Total marks of practical work are calculated at the end of the term and converted as per teaching scheme.
- Course outcome is calculated by determining the number of students having met the set standard.
- Board Examination:
- MSBTE provides teaching scheme for every semester, which includes theory Examination and Practical/Oral Examination.
- The direct attainment is calculated by taking into consideration the 20% for internal and 80% for Board Examination.
- For I scheme pattern the direct attainment is calculated by taking into Consideration the 40% of allotment level for internal and 60% of allotment for MSBTE exam. Course End survey (CES)
- After completion of every course end survey is carried out for students about course outcomes. Responses are measured in terms of percentage of students satisfied above 50%.
- Total CO attainment is calculated giving 20% weightage to Course End Survey and 80% weightage to direct attainment.

Fig.1 shows direct attainment calculation for internal test.in this calculation internal test marks are evaluated bitwise. For each question bit value of how many students have attempted that question and how many out them scored greater than fifty percentages evaluated. According to scored percentage attainment level are decided. This attainment levels are given from level 1 to level 3.each question bit is associated with some CO, eventually average value CO is calculated. Same process is applied to second internal test and average value of CO calculated. Further these values are combined with board exam theory and practical attainment values.

Proposed System

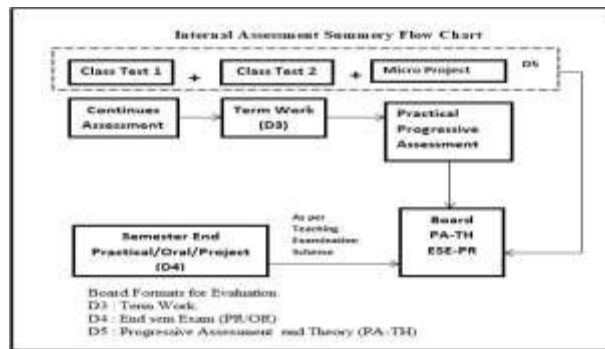


Fig. 1 Direct Attainment Calculation for Internal Test

Fig. 2 shows direct attainment calculation for board exam.it consists of theory as well as external practical exam. For the calculation theory exam attainment, students theory obtained marks are consider in which how many students scored marks greater than set target percentage out total attempted are evaluated. same is consider for practical exam and attainment is calculated.

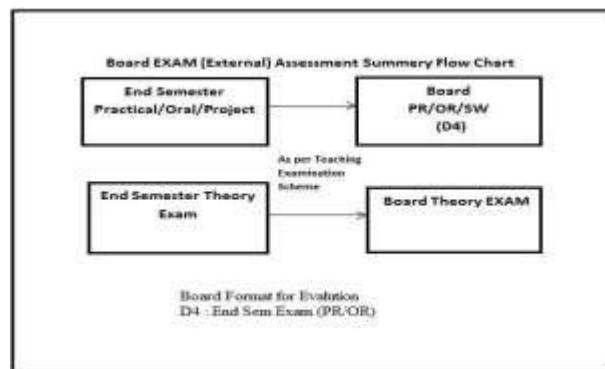


Fig. 2 Direct Attainment Calculation for Board Exam

Record the attainment of Course Outcomes of all courses with respect to set attainment levels-Measuring Course Outcomes attained through board examinations. If the targets are not achieved for particular course, then corrective actions are taken for particular course.

Institutes can be set Attainment Levels for target of average CO for internal as well as external Assessment as per following table.

Table I Attainment Levels.

Co	Attainment Value	Target Co Attainment Level
0	≥ 1	Level 1
1	≥ 2	Level 2
2	≥ 3	Level 3

IV. CONCLUSION

Higher education system quality is improving day by day. NBA Accreditation process helps the various technical institutes to continuous improvement in their program. For NBA Accreditation educational institutes have to prepare Self-Assessment Report. Criterion 3 of 'self-assessment report' is an important criterion related with course outcomes and program outcomes. This criterion gives an indication of how a program is performing in terms of attainment values of course outcomes and program outcomes. The paper has reviewed a simplified methodology for measuring or

computing the attainment of course outcomes for polytechnic institutes. Course outcomes are mapped with program outcomes. The attainment value of course outcome is not as per the set target value then there is gap in that CO hence to bridge the gap corrective actions are taken. In this way continuous improvement is achieved. Further the attainment values of Program outcomes and program specific outcomes computed & compared with the target attainment values and action plans may be laid for those POs and PSOs whose attainment value is less than the target value. The methodology can be used for the measurement of COs, POs and PSOs in an autonomous, non-affiliated institutes

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