Review of Course Outcome Assessment methods in Outcome based education

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Abstract

Outcome-based education (OBE) is a goal-based education process that allow students to achieve specific goals for that subject after the completion each subject of a particular course. OBE is implemented in engineering colleges of India in accordance of the guidelines provided by AICTE. The paper discusses various methods for evaluating the course outcome. The relationship between the results of the course.

Keywords: outcome-based education, course outcome, program outcome

I. INTRODUCTION

Outcome based education is an educational approach of teaching and learning based on a predefined set of expected outcomes. OBE provides an opportunity for overall learning where an engineering graduate is trained in the entire outcome of the NBA program. The National Board of Accreditation (NBA) is an Indian body that promotes international standards and accredits institutions with OBE courses was initially established in September 1994 and became autonomous body on January 7, 2010[4]. OBE courses can help students who have signed the Washington Accord Act to be employed in other countries, India signed the act on June 13, 2014. The results of the course outcomes (COs) are skills, knowledge that a student achieves after successfully completing the course. The outcomes of the program (POs) are the knowledge, skills and attitudes that students should have in India at the end of four years of engineering. The educational goals of the program (PEOs) are broad statements describing the career and professional achievements that the program is preparing graduates to achieve in four years of

graduation. Program Specific Outcomes (PSOs) are statements describing what the graduates should be able to do of a specific engineering program. All courses under the bachelor's degree programme would have their own course outcomes or commonly referred to as CO. These COs are produced on the basis of the programme outcomes (PO) requirements. Each CO is mapped to PO. The PO will be then mapped to the educational goals (PEO) program. Figure 1 shows an example of CO, PO and PEO relationship.

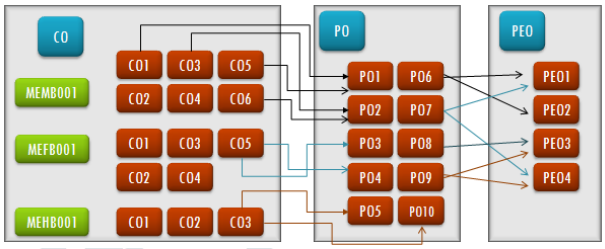

Figure 1: An example of the relationship between CO, PO and PEO

CO achievement starts with writing appropriate course outcomes for each course throughout the entire degree program. Assessment of course outcome is the core assessment of the courses offered by the specific program. It evaluates the learning experience of students directly as well as teaching effectiveness. The mapping and attainment of CO is complex as well as time consuming. As suggested by Blooms [6] and Anderson [7] the course outcomes are written by the respective faculty member using action verbs of learning levels [3]. There are 2 types of assessment methods i) Formative assessment and summative assessment. Formative assessment is said to be part of the delivery or instructional process, where it is used to gather information and adjust the teaching and learning in real time Summative assessment is more common approach, where the students are given a standardized test or examination at a certain time period,

such as mid-semester test or final examination, which is also known as formal assessment.

At that particular point in time, this type of assessment is used to test what the student knows and whether he or she has met the course goal or the learning outcome. Appropriate assessment method is required to obtain the correct feedback for CQI [1]. The
type of assessment methods would depend upon the expected outcome of the course and the method of delivery. A summary of the assessment role is illustrated in Figure 2.

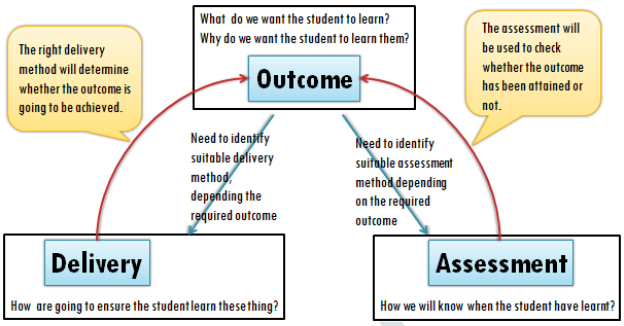

Figure 2: Block diagram showing the relationship between assessment, delivery and the outcome in OBE

Course Attainment Model

Each institute affiliated with the different university has to follow different models or even make one to identify a program's course attainment. From point of view of implementation, the figure below would provide a brief explanation of the model used by the institution to assess the course outcome of a particular course.

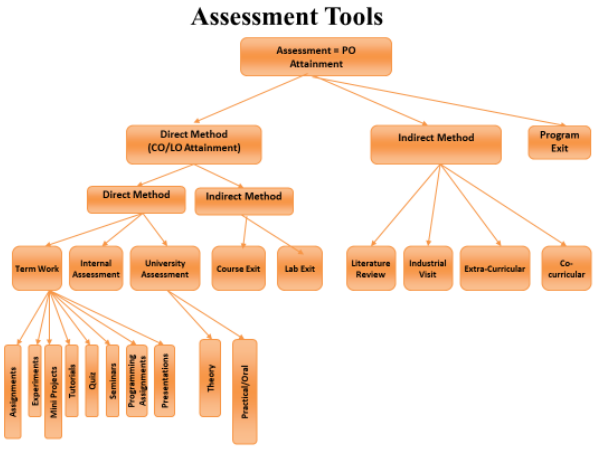

Figure 3: The Assessment Model

Any program assessment is carried out on the basis of guidelines provided by the National Accreditation Board. There are a total of 12 parameters that must be achieved by each engineering graduates after graduating from a specific program. The 12 parameters are Scholarship of Knowledge, Critical thinking, Problem Solving, Research Skill, Usage of modern tools, Collaborative and multidisciplinary work, Project management and Finance, Communication, Life-long learning, Ethical Practices and Social Responsibility, Independent and Reflective Learning [5]. Our institute's program achievement is assessed using Direct or Indirect methods. The direct method uses course outcome attainment result or laboratory outcome attainment results and the indirect method is calculated from literature review, industrial visit, co-curricular and non-curricular. In addition, the direct method is divided into direct and indirect method. The direct method is the Internal Assessment, Term Work, University Assessment level ranking and indirect method is to ask students to judge themselves by providing course exit and lab exit forms. Every student must submit assignment, journals, mini project, tutorials, quiz, presentations, etc. in term work. The student is graded by performance, with a total out of 5 marks given to the student. Internal assessment is carried out on the basis of the COs mapped in the chapters. The average marks obtained in internal assessment are calculated and subsequently help to distinguishing between different marks of attainment.

University marks also helps to evaluate the number of students passed and the attainment obtained. The students are assessed in an indirect method based on the involvement with the various opportunities that they have been given. There are different student chapter as well as cells in our institute based on their involvement the feedback is taken. Even feedback on industrial visits is taken that is used for attainment. In the literature survey, students are asked to use college's digital library for individual assignment or final year project. Another form that is program exit is only for final year student which assess what the student has learned in a particular program after years.

Assessment Process of Course Outcome Attainment Level

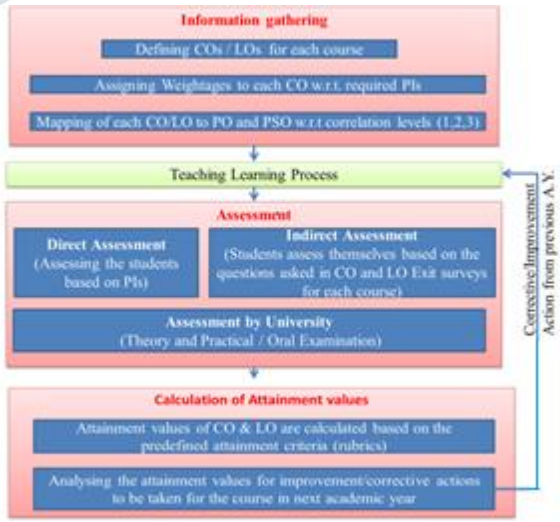

Figure 4: Process of assessing course outcome attainment level

The COs and LOs are predefined by the university but at the institute level if the faculty in charge feels that the course or laboratory outcome is not appropriate then they can change the course or laboratory outcome for the institute level. Assigning weightage to each co and lo is must as it would be useful in calculations. With the weightage provided to the CO or LO the faculty can provide students with that much content for that particular assessment. The mapping of CO with PSO and PEO is most important as it will verify whether the CO satisfies particular PSO and the PSO satisfies PEO. Calculation of attainment is based on the predefined attainment criteria i.e. the rubrics matrix. The final attainment obtained by the data collection from direct or indirect methods is used by the programme in charge to decide whether improvement is required or not for the next academic year.

II. CONCLUSION

The National Board of Accreditation is the body which will sets the guidelines for any institute for becoming an NBA accreditate. The complex mapping of CO, PO, PSO is understood properly and a model based on the related work is used as reference just to make an automated portal for calculating the attainment online. The model for attainment is totally different based on country as each provides different subjects for the programs.

III. REFERENCES

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