Individual Centric Framework for Quantifiable Attainment of Career Aspirations: An Indian Perspective

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Abstract: Focus of the Indian higher education system has been more job centric, thereby losing the value of learning. Limited learning eventually results into less employability. There has been a significant drop in the number of employable fresh graduates. Industry also claims that lot of resources are being utilized to convert raw resources into usable workforce. The various initiatives of the Indian government like Skill India clearly indicates that the need of the hour is therefore to restructure the academic learning process. The solution to the challenges being faced by the current learning process of the Indian higher education system is to adopt an individual centric outcome approach. This paper proposes an individual-centric outcome based education (i-OBE) framework which is modified version of outcome based framework. This framework aims to enhance the outcome based education by integrating an individual centric approach throughout the execution of an academic programme in a stipulated time frame. The paper discusses the application of the proposed framework to the four-year undergraduate engineering degree. The framework efficacy has been tested by implementing it partially through a career assessment tool on 1215 subjects. Our findings reveal that the individual centric outcome approach results in

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quantifiable attainment of career aspirations as against traditional outcome based approach.

Keywords: Outcome Based Education, Vertical specific, individual centric approach, career assessment

1. Introduction

The knowledge imparted through Higher education permeates into all strata of society for a better quality of life. The higher education system in India has grown significantly in the recent past and is one of the largest in the world. It is major driver of rising economy and fostering a knowledge driven society in the country. The system has some pressing issues of concern at present; important one being the quality and employability of the graduates. It is more apparent in the engineering disciplines. Therefore the need of the hour is to reorient the engineering education system to make it more meaningful and purposeful. Though many reputed engineering institutions design the curriculum in collaboration with industry according to the current market need yet there is a gap in producing competent and skilled workforce. This gap could be attributed to the shortcomings in the existing education framework adopted by the engineering education systems. The prime one being lack of methods to match individual's aspirations with jobs.

From the vision and mission of the Engineering institutes to the parameters used for assessment by the

accreditation bodies and the career aspiration of an individual, it is evident that the outcome can clearly be classified into two distinct domains: Research and Application. It is therefore realized that the inclination towards the outcome of an academic programme should be individual centric. Thus, Engineering education system needs moulding as per the interest and goals of an individual. Various research shows that individuals who clearly understand their goals attain better outcomes. Performance of an individual in the opted career path would be enhanced by grooming them as per their interest and thus utilizing their potential to the fullest. The individual learning process would get an impetus if research oriented and application oriented domains are identified early in the engineering programmes.

Considering that Engineers are absorbed in many different job profiles and sectors in the industry, it is imperative that the Engineering Education System should cater to the grooming of individuals to best fit the given job profiles. On one hand the Indian higher education system has made considerable progress in terms of capacity creation, on the other hand the employability of the graduates at large is still under question. A report released at the FICCI Higher Education Summit in 2014 attributes the low employability of graduates to varying factors including outdated curriculum, high student teacher ratio and lack of Institutional and Industry Linkages. A National Employability Report 2016 conducted by Aspiring Minds found out that there has been no significant change in employability in last couple of years . The report states that only 18.43% of engineers were employable for the software service sector, 3.21% for software products and 39.84% for Business Process Outsourcing in 2016. Thus it suggests that there is a dire need to find the lacuna in the prevailing engineering academic frameworks and scale them up to have an exponential impact on employability.

Globally in the Engineering Education systems, during the curriculum design process due emphasis is given to employability of the graduands(Chavez et al., 2016, Chowdhary et al., 2018). This attribute gets highest priority while setting the objectives, designing the curriculum, delivering the contents and aligning the outcome (Tam, 2014). For instance various global education systems in Europe focuses on integration of school based learning with work based experience to prepare students for successful transition to full time employment. Looking at the success of such systems, it is highly desired that such practices be adopted and integrated to the Indian Education System. This work presents an individual centric approach based framework to address the challenges being faced in the Indian Engineering education system. The authors discuss the application of the proposed framework to the four year undergraduate engineering degree. Rest of the paper is organized as follows. Section 2 discusses the existing outcome based education and Section 3 details out the proposed framework through various sub sections on Individual centric verticals, alignment and assessment tools and enablers. Section 4 and 5 presents the findings, limitations of the work and future scope.

2. Outcome Based Education

The focus of Outcome Based Education (OBE) is on defining, measuring and evaluating the Programme Educational Objectives (PEO), Programme Outcomes(PO), Course Outcomes at institute, programme and course level (Harden 2007, Barman et al. 2014, Alias and Bhkari, 2017). The outcomes are derived and aligned with the vision and mission of the organization by incorporating the inputs of all stakeholders (Esmaily et al. 2014, Khan and Alam 2017). Important consideration while framing the PEOs are to ensure that they are manageable, achievable and specific to the programme. POs are essentially a range of skills and knowledge that a student will have at the time of graduating from the programme. The achievement of PEOs is assessed and evaluated using different tools developed by the organization. It is a continuous processthat leads to improvement and refinement of the PEOs. The existing outcome based education framework is as depicted in Fig. 1
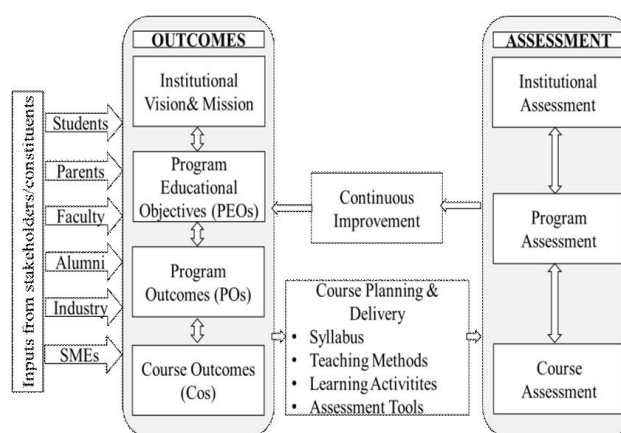

Fig.1 : Outcome Based Education Framework

3. Proposed Framework

In the above discussed conventional framework, the PEOs are framed by incorporating the inputs from all stakeholders and a consolidated list of PEOs is prepared which is applicable to all the students of that programme. In the existing OBE framework, PEOs and POs are specific to the programme but does not cater to the individuals interest (Cox et al., 1997, Kaliannan and Chandran 2012, Deneen et al. 2013). The assessment of the Programme outcomes by the end of the programme reveals that there is high level of employability mismatch due to generic nature of the objectives, outcomes and assessment methodologies (Manzoor et al. 2017).

The proposed framework is individual centric OBE (i-OBE) which tries to identify the interest of a student at the initial stage of objective formulation. The inputs from students, parents, and alumni is collected through a well-designed career assessment form and used to identify the individual centric verticals. These identified individual centric verticals forms the basis for formulating the PEOs, PLOs and designing assessment tools for grooming the individuals towards their career aspirations. This framework would ensure that the learning process is vertical specific which is the foundation of i-OBE.

A. Identification of Individual Centric Verticals

This is the first stage of i-OBE for identifying the interest of the individuals for opting a given programme. The interest assessment may vary across

Career Assessment Form				
Date				
Name of Student				
Enrollment Number				
Discipline/Programme				
Cumulative Grade Point Average	Secondary Education level	Senior Secondary level Education	Under Graduate Level	Post Graduate Level
Future Plans :				
Higher studies (MS, MBA, M. Tech)				
Preparation for exams (IES, IAS, GATE, Others)				
Job (Private/Government Sector)				
If sought placement, then what type of job profiles & companies required?				
If interested in Self Employment, then what type of start up support required?				
Identification of training needs/Institute assistance Required				

Fig. 2. Career Assessment Form(CAF)

the region and programme and hence it is difficult to design a global tool for this purpose. Considering the Indian Engineering Education, a career assessment form (CAF) as in fig. 2 can has been used as the survey tool during admission process or through the learning process which can form the basis for categorisation of an individual centric vertical. Such assessment form should be complemented with various career assessment tools that can guide the individual to explore the career based on interests, personality/values and skills.

B. Classification Based on Individual Centric Verticals

From the perspective of Indian Engineering education, the individual centric verticals can be broadly classified as: Technical and Techno-Managerial. The individuals who wants to move up the career ladder as techno-manager may choose either of the three sub-verticals: higher studies, industry oriented job or self-employment. The hard core technical engineering graduates have option to pursue research or opt for application oriented verticals. To pursue research in technical core area, the individuals should opt for higher studies or research oriented job. The application vertical is broken down into industry oriented jobs and self-employment. Fig. 3 shows the individual centric verticals for Indian Engineering education system.
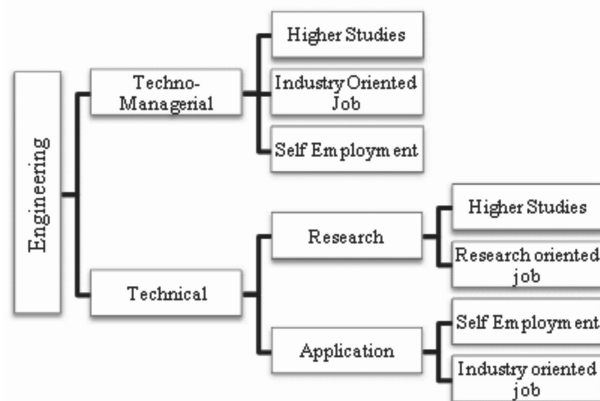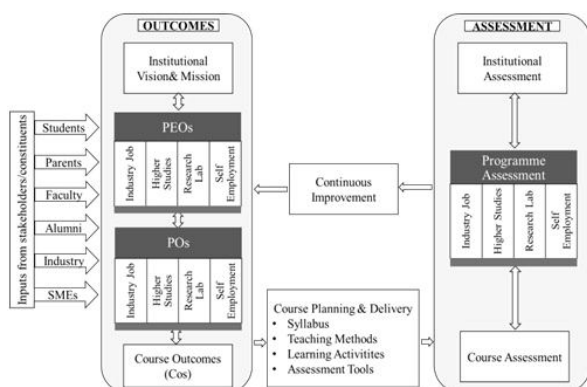

**Fig. 3 : Individual Centric Verticals:
An Indian Perspective**

C. Framework Outline

The new frameworki-OBE proposed in this study incorporates the individual centric verticals as the sub areas of PEOs, POs and programme assessment. At

the initial level, inputs from students, parents and alumni will be analysed for different interest and goals of the students of a given programme. The interest and goals will be collected through a well-designed career assessment form (CAF). Distinct verticals will then be identified and PEOs and POs will be defined for every vertical separately. The programme assessment will be designed based on the selected vertical. The proposed framework is illustrated in fig. 4.

Fig. 4: Individual centric Outcome Based Education(i-OBE) Framework

D. Assessment and Alignment Tools

i-OBE is driven by assessments and alignment that focus on well-defined vertical based learning outcomes. In i-OBE standard-referenced assessments like class test, quiz, assignments could be used but with focus on expected vertical based performance. For improving the efficacy of i-OBE, the feedback mechanism and continuous assessment should be used as alignment tool so that the individuals are mentored as they move through different levels along the chosen verticals.Assessment rubrics should be designed very thoroughly for measuring the extent of mapping of vertical based learning objectives with learning outcomes.

E. Enablers

To ensure that the individuals are being groomed in verticals of their interest it is required to use various enablers that would facilitate the i-OBE framework in attaining improved individual satisfaction level. Enablers like student satisfaction surveys at different levels, introduction of vertical specific courses and industry trainings, grooming by industry and research lab mentors would provide the required support in ensuring implementation of the proposed framework.

F. Implementation

An efficient implementation of any education framework require a thorough understanding of the objectives, design of enablers such that it is aligned along the objectives, use of assessment and alignment tools at all levels of programme delivery, strong communication and feedback mechanism to and from stakeholders. The framework should be open and flexible enough to use flexible grouping, continuous progress, technological approaches and instructional management (Spady, 1988). The definition of vertical based programme learning outcome is the first step in implementation of i-OBE. The staffs and students should be communicated clearly about this vertical based PEOs, POs. and programme assessment. This will ensure right design of course content delivery, choice and use of right teaching method and various class room or group activities aligned along the identified verticals. Also, students will be able to comprehend and follow the verticals of their choice only if the communication is effective. The student progression should be measured along all the eight semesters of engineering discipline using various direct and indirect tools. The assessment method adopted must measure the attainment of vertical based learning outcomes. This requires selection of right assessment tools including written assessments such as multiple choice questions, work-based assessment or the use of portfolios to assess outcomes such as self-reflection, critical thinking and personal development.

4. Findings

The developed framework was implemented on 1215 engineering students of final year. The department responsible for placement gauged the achievement of learning outcome based on the total number of students placed/unplaced. With 692 students placed (out of total number of 1215 students), the percentage of students who were reported to attain
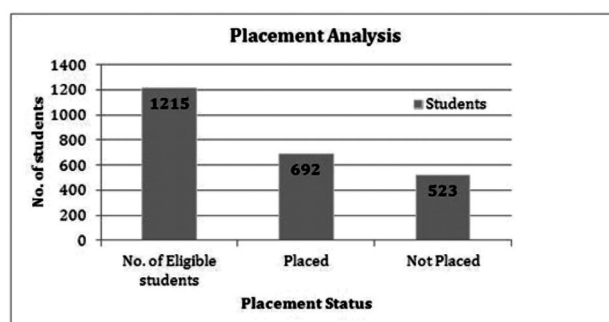
Fig. 5 Placement Analysis

learning outcome of the programme by means of taking campus placement was around 60% as shown in fig. 5.

However, the faculty mentors had different observations about campus placement when they interacted with the students. They found that many students did not appear in the campus placement owing to the profile and interest mismatch. This formed the basis for carrying out career assessment of these students. Thus,i-OBE framework was partially implemented on 1215 students of engineering discipline during their final year. Through this exercise all the faculty mentors interacted with their mentees and got the CAF filled to analyse the interest of the student. The individual centric verticals namely industry oriented job, higher education, research and self-employment were identified and the learning outcome was assessed accordingly. The campus placement was included under the vertical of Industry oriented job. The unplaced students were recategorized under higher education, research and self-employment as given in fig. 6. It was found that the percentage of attainment of career aspiration improved to around 72%.
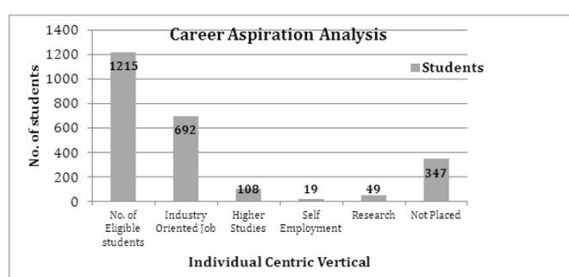
Fig. 6 Career Aspiration Analysis

This case study indicated that the learning outcome cannot be just around industry oriented job and should evolve to vertical based learning outcome. It also indicated that the implementation of i-OBE from the first year of graduation will result in improved satisfaction level among students and percentage increase of career aspiration attainment.

5. Conclusion

i-OBE is a modified version of OBE that integrates individual centric verticals with outcome based education framework. It aims at improving the satisfaction level of the students by providing them the freedom to choose their interest based vertical and align the learning process accordingly. From the beginning of the engineering programme the individual is oriented and groomed as per his/her interest. Further, the assessment is also modified so that the evaluation is individual centric. Through this framework, the authors have attempted to shift the learning outcome of engineering discipline from 100 percent placement to 100 percent attainment of career aspiration. With the presence of specific, unambiguous vertical based outcomes, i-OBE will promote self-directed learning and encourage active discussion between faculty and students for achievement of vertical specific goals.The major limitation of this framework is that the workload of teachers will increase significantly as they have to design assignment,group task and assessment for all the identified verticals.

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