

Benchmarking: An Integral Element in Outcome-Based Education



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INTRODUCTION

Outcome-Based Education (OBE) is an educational process that focuses on achieving specified outcomes in terms of individual student learning. The approach focuses on outcomes rather than inputs. Implementation of OBE has been made compulsory for all Institutions of Higher Learning (IHLs) through the *Pelan Strategik Pengajian Tinggi Negara* (PSPTN) and the Malaysian Qualification Agency (MQA) Act 2007. Hence, apart from having an excellent programme curriculum, Institutions of Higher Learning need to interpret and strategize on the best OBE implementation. The evaluation and achievement of outcomes are heavily supported by various elements such as staff, students, facilities, and the quality management system.

The Engineering Programme Accreditation (EPA) Manual 2007 does not provide a guideline on the OBE system design, but specifies on the important elements that any engineering degree programme should have. Hence, the implementation of OBE would be uniquely devised by the IHLs. For accreditation purposes, IHLs will then be responsible to prove on the practicality and effectiveness of the system. In order to define the current standing of an engineering programme, benchmarking with other similar programmes would become a necessity, not only at the programme curriculum level, but also on the academic system as a whole.

DEFINITION OF BENCHMARKING

Benchmarking can be defined as an activity to measure processes and outcomes, and to compare with specified standards for the purpose of continual improvement. Hence apart from the EPA Manual 2007, benchmarking with other engineering programmes would also be a practical approach. Through benchmarking, different programmes would actually complement each other by exchanging relevant information on programme curriculum, implementation of OBE and issues of accreditation. This would enable the academic management to realise the current drawbacks in the current OBE approach and improvise in the spirit of continual quality improvement (CQI).

BENCHMARKING TECHNIQUES

Online benchmarking can be utilised as a minimal cost information scouting approach. However, the technique is only applicable for published materials such as Programme

Educational Objectives (PEOs) and Programme Outcomes (POs), and the curriculum structure. Hence the information can only be obtained on the surface level. The technique is particularly effective for initial stage and should be conducted prior to actual benchmarking visits.

Actual visits are naturally costly, especially for overseas travel. However, the approach would be highly advantageous since it also covers unpublished materials such as the implementation of OBE system. The information obtained would be the most recent, and these can only be obtained through a thorough discussion with the academic programme management. The outcomes of the visit should complement the preliminary data obtained from the online benchmarking.

TIMING

There is no strict guideline on the best timing for benchmarking activities to be conducted. In general, the visits can be conducted under three justified conditions. Firstly, benchmarking should be conducted at the initiation stage of the programme proposal. This would require in-depth analysis on the uniqueness of the proposed programme as compared to the existing similar ones from other universities. Benchmarking can also be conducted on a yearly basis with the purpose of tracking recent changes taking place at other IHLs. Lastly, the visits can be done prior to the accreditation visit. This would provide an update on latest issues pertaining to accreditation visits and processes.

TYPES OF INFORMATION

Benchmarking activities are usually conducted to compare and contrast between similar engineering degree programmes. Among the most regular types of information to be obtained would be the programme curriculum and course content. Such information would provide an indication on the maturity of the programme itself and defines its unique specialisation. Maturity of the programme curriculum is reflected in the distribution and similarity of core engineering courses, while the uniqueness can be observed from the elective and specialised courses.

In addition to the programme curriculum, information can also be obtained on content delivery methods such as problem-based and cooperative learning. Their implementation is not only restricted to traditional classroom

lectures and tutorials, but also encompasses laboratory and project-based courses. For instance, the majority of IHLs uses the probing approach with laboratories as a distinct course, while others use the proving method with laboratories being embedded within a particular course. Hence, this would allow the different teaching philosophies to be observed.

In any engineering programme, supporting facilities such as the laboratories would be equally important for teaching and learning activities. Formal learning in such environments would greatly speed up and enforce knowledge absorption by students. However, the effectiveness would be reflected by the student to equipment ratio. In addition, laboratories can also be an effective avenue to instil safety awareness in students. Thus, such information obtained from benchmarking can become a reliable justification for upgrading of facilities.

The most critical type of information that has been outlined in the EPA Manual 2007 and that can only be obtained through benchmarking visits would be the variation of OBE systems adopted by different engineering programmes. Important aspects to be considered would include the assessment of PEOs, POs, and Course Outcomes (COs). The information is crucial since it relates to the higher level PEOs, and to the lower level COs, through assessment of examination and related coursework components. The linkages between the different components would vary between engineering programmes and the practices can be demonstrated through proper documentation. Differences

in CQI approach can also be observed where the systems are designed to conform to the available resources and niche of the programme.

CONCLUSION

Benchmarking serves as an effective self-checking mechanism. Similarity with other established engineering programmes indicate maturity in planning and implementation of the OBE system. Dissimilarities, however, would provide opportunities for improvement. The best practices from the other IHLs can be implemented if they align with the resources and the niche areas of the university. ■

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CONDOLENCES

With deep regret, we wish to inform that **Dato' Ir. Lim Khoon Hock (M05446)** and **Ir. Chai Kim Soon (M02672)** had passed away on 1 August 2012 and 24 May 2012 respectively. On behalf of the IEM Council and management, we wish to convey our deepest condolences to both families.

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