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Knowledge versus Practice on the Outcomes-Based Education Implementation of the Engineering Faculty Members in LPU

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Abstract

This study aimed to identify the extent of knowledge and practice of the COE Faculty Members on the Outcomes-Based Education implementation in Lyceum of the Philippines University – Batangas during 1st Semester, SY 2013 – 2014. Descriptive type of research was utilized in the study. Results showed that there is a great extent in terms of knowledge and practice on OBE implementation among the faculty members of the College of Engineering, however there is a moderate extent on the level of understanding of faculty members on the appropriate assessment method to be utilized. Faculty members with high level of knowledge and understanding on the implementation of OBE have also higher possibility to contribute in the realization of the objectives of OBE through practice. The proposed action plan may be implemented and evaluated to ensure its utilization and effectiveness. Provide follow-up studies regarding the problems encountered by the faculty members in submitting the OBE requirements.

Keywords: Outcomes-Based Education, Engineering, Assessment, Portfolio

Introduction

Implementation of Outcomes-Based Education (OBE) is the main thrust of most Higher Education Institutions in the Philippines today to go along with the standards of foreign universities and colleges all over the world. This approach in education is not anymore new to first world countries because they started it in 1980s. Outcome-based education is an approach to education in which decisions about the curriculum are driven by the exit learning outcomes that the students should display at the end of the course (Davis, 2003; Caguitla, et. al., 2013). Philippine Higher Education's are at the crossroads, faced with many new demands and challenges brought by the new typology set by Commission on Higher Education (CHED) and implementation of the Outcomes-based Education (OBE). There are demands for curriculum revisions to meet the graduate learners skills required in the fast-changing and global standard workforce needs (Bay, 2013) while research is one of the standards of accreditation in assessing the development of competent professionals (Gomez & Panaligan, 2013).

LPU-Batangas considers quality instruction as mandatory and expects its faculty to perform their instructional tasks to a maximum making its institution's graduates employable and

competitively at par with other graduates in the varied fields (Ditan & Aguba, 2013). The quality of an educational system can be judged from at least three perspectives: the inputs to the system, what happens within the system, and the outputs from the system. Those who are interested in inputs will focus their attention primarily on finances, resources, infrastructure, etc. and may use economic rationalism as the basis for their judgements about the quality or value of the system. Those interested in what happens within the system will focus their attention primarily on the processes used to organise, control and deliver education and training. Those interested in outcomes will focus their attention primarily on the products or results of education (Killen, 2000).

Killen argued that all aspects of education are important and that quality should not be judged from any narrow perspective. However, in recent years there have been increasing calls in Western society for greater attention to be paid to the outcomes of education so that the return on investments in education (particularly public education) could be evaluated. These increasing calls for accountability were one reason for the rapid spread of various forms of outcomes-based education in countries such as the United States and the United Kingdom during the 1980s and 1990s, respectively. In Australia also, the concept of educational accountability was one of the driving motives behind the introduction of OBE.

In the Philippines during 2007 and 2008, the Commission on Higher Education, through the efforts and recommendation of the Technical Panel for Engineering and Technology (TPET), has released a series of memoranda for compliance by all engineering schools offering baccalaureate engineering programs. The CHED Memorandum Order (CMO) mandated engineering schools to follow a new set of policies, standards and guidelines for all baccalaureate engineering programs that defined the needed competencies for the practice of each engineering field, and a set of program outcomes that engineering students in the different fields are expected to possess by the time they graduate. The first batch of students covered by these CMOs is expected to graduate in 2013 (CMO No. 77, s.2012).

Most universities in the country are already undertaking some of the educational practices involved in OBE. What they really need now is proper documentation of evidences of assessments and evaluation on the effectiveness of the program educational objectives which will prove that the graduates are really equipped with essential knowledge, values (behaviour) and skills that can contribute to the development of the community.

In Lyceum of the Philippines University, OBE started in 2011 to become part of the discussions in seminars and conferences. LPU-Batangas like many other universities in Asia faces rapid and incessant challenges brought about by technological advancements and global demands. As an educational institution it has to deliver the products and services necessary to achieve the outcomes it intends to produce (Javier, 2012).

Faculty members were given orientations to equip them with the necessary knowledge and skills in preparation for OBE implementation and International accreditations that require the same approach to education. College of Engineering (COE) in LPU is starting to prepare the OBE documents but the totality of involvement of faculty members and their readiness in terms of knowledge and acceptance of this trend through practice are neither being assessed

nor evaluated. Therefore, determining the real score of the OBE implementation in Engineering department during 1st Semester, SY 2013-2014 is the main focus of this study.

Laurel added that OBE is a new trend in education. Therefore, all good institutions abroad are doing it. He mentioned that there is no excellent school without OBE. With OBE, administrations and faculty members can work closely with students. Soon, all institutions in the country will be implementing OBE (Caguimbal et. al., 2013).

The findings will serve as a good source of input in planning and organizing the faculty development program of the College of Engineering, wherein the real thoughts and practice of the faculty members will be solicited to establish corrective actions on the areas where they need more understanding of the OBE implementation for them to participate in the process of preparing the documents needed for International Accreditation.

Objectives of the Study

This study aimed to identify the extent of knowledge and practice of the COE Faculty Members on the Outcomes-Based Education implementation in Lyceum of the Philippines University – Batangas during 1st Semester, SY 2013 – 2014.

Specifically, this study aimed to determine the extent of understanding in terms of knowledge of the Faculty members of the College of Engineering on the Implementation of OBE; to determine the extent of actual practice of the faculty members on the implementation of OBE in the College of Engineering; to determine if there is a significant relationship between the level of knowledge and actual practice of the COE Faculty members on the OBE implementation and to propose an action plan to enhance the level of understanding and practice of the Engineering Faculty Members on the OBE implementation.

Review of Literature

According to CHED Memorandum Order No. 77, series of 2012, quality education today is measured not only by effectiveness, efficiency, sustainability, but also by relevance. An alarming observation of Filipino students reveals that they excel in knowledge acquisition but fare considerably low in lessons requiring higher order thinking skills (Pateña & Dinglasan, 2013). Relevance in education would mean addressing the needs of the students and the employers of today and providing the future graduates a curriculum of global comparability. In the case of engineering education, six countries represented by their engineering professional societies signed the Washington Accord (WA) in 1989 defining common standards for equivalency among their graduates of engineering programs. Full member signatories of the WA agree that graduates from their accredited engineering programs shall be mutually recognized across their countries as having met the academic requirements for entry to the practice of engineering, thus promoting mobility of professional engineers practicing across their borders.

Washington Accord Signatories have full rights of participation in the Accord; qualifications accredited or recognised by other signatories are recognised by each signatory as being substantially equivalent to accredited or recognised qualifications within its own jurisdiction. The following member countries are: Australia, Canada, Chinese Taipei, Hong Kong China,

Ireland, Japan, Korea, Malaysia, New Zealand, Russia, Singapore, South Africa, Turkey, United Kingdom and United States (www.washingtonaccord.org).

More importantly, since 2000, accreditation standards among the full members of the WA have shifted from an Input-Based to an Outcomes-Based Education (OBE) system, where the focus is for the institutions with accredited programs to demonstrate that their engineering graduates have met an acceptable level of knowledge, skills, and attitude demanded by their different fields of practice. Furthermore, accreditation demands that program outcomes must be aligned with the mission and educational objectives and the OBE system is supported by a continuous quality improvement program (CMO No. 77, s.2012).

To meet the challenges of the new educational approach, lecturer's roles have been reconceptualised. Lecturers need to be supported to make the paradigm shift that is required to understand OBE and its purpose and to understand the necessary competences that are essential for fulfilling the expanded roles of the educator. Becoming a reflective practitioner – understanding where we have come from, why we teach the way we do and cultivating the habit of continually reviewing our practice as educators to improve the quality and efficacy of our delivery are key to making the necessary transition (Bialobrzeska, 2006).

Education is facing challenges in terms of worldwide movement of international students mostly from the Asian and African continents to universities in the West to provide an important source of income to those receiving universities (Biggs and Tang, 2010). With this trend higher education is pressured to come up with quality assurance or quality enhancement of teaching and learning (Guico & Dolor, 2013). New and emerging technologies challenge the traditional process of teaching and learning and the way things are managed and controlled (Macatangay, 2013). This means that students demand high profile programmes that will enhance their prospects. Hence, the challenge lies on how the higher institution will provide the relevant approach to teaching that will address those aspects that bear upon teaching and learning (Guico & Dolor, 2013).

OBE, like most concepts in education, has been interpreted in many different ways. The term is often used quite inappropriately as a label for a great variety of educational practices that pay little more than lip-service to the fundamental principles of OBE. To clarify some of this confusion, educators must start by realising that OBE can be viewed in three different ways—as a theory of education, or as a systemic structure for education, or as Outcomes-Based Teaching Learning (OBTL) classroom practice. Ultimately, HEIs need to align the systemic structure and the classroom practice with the theory if they are to have genuine outcomes-based education. People can think of OBE as a theory (or philosophy) of education in the sense that it embodies and expresses a certain set of beliefs and assumptions about learning, teaching and the systemic structures within which these activities take place. The most detailed articulation of the theory underpinning OBE is given in Spady. While Spady is not the only person to have made a significant contribution to OBE, he is regarded by many as the world authority on OBE and it is evident that his ideas have had considerable influence on the approach to OBE that has been taken in Australia (Killen, 2000).

Educational/Professional achievement of teachers greatly affects the implementation of OBE in LIMA. If students are to learn desired outcomes in a reasonably effective manner, then the

teacher's fundamental task is to get students to engage in learning activities that are likely to result in their achieving those outcomes. It is helpful to remember that what the student does is actually more important in determining what is learned than what the teacher does (Caguitla, 2013).

Materials and Methods

Research Design

Descriptive type of research method will be utilized in the study where quantitative analysis will also be employed.

Participants

After series of seminars and workshops facilitated by the University in developing the awareness and ability of the faculty members in the implementation of OBE, the extent of knowledge and practice of the 13 faculty members from the College of Engineering employed during 1st Semester SY 2013 – 2014 will be assessed based on their actual experiences in the preparation and implementation of Outcome-based education leading to international accreditation. First Semester of the current school year is the appropriate period of assessing what the faculty members have done so far in applying the technicalities of the entire OBE system.

Instrument

The instrument to be used to gather data regarding the variables stated in the study is a researcher - made questionnaire. Idea of the instrument was taken from the OBE Implementation Guidebook prepared by OBE Committee (2012) from the Faculty of Electrical & Electronic Engineering of Universiti Tun Hussein Onn Malaysia and from the series of seminars attended by the researchers about OBE.

Data Gathering Procedure

The questionnaire administered by the researchers personally during the monthly meeting sometime in November, 2013 and 100% retrieval rating was achieved from the 13 faculty members.

Data Analysis

Weighted mean will be used to interpret the extent of understanding in terms of knowledge and the extent of actual practice of the Faculty members of the College of Engineering on the Implementation of OBE.

Pearson Product Moment Correlation Coefficient will be used to test if there is a significant relationship between the level of knowledge and actual practice of the COE Faculty members on the OBE implementation.

This arbitrary guide was used to analyze and interpret the gathered data from the questionnaire.

Weight	Range	Verbal Interpretation	
5	4.50 – 5.00	Very Great Extent	(VGE)
4	3.50 – 4.49	Great Extent	(GE)
3	2.50 – 3.49	Moderate Extent	(ME)
2	1.50 – 2.49	Less Extent	(LE)
1	1.00 – 1.49	No extent	(NE)

Results and Discussion

Table 1 presents the knowledge of OBE Implementation through Instruction among the faculty members of the College of Engineering.

Table 1
Knowledge of OBE Implementation through Instruction

Knowledge of OBE Implementation through Instruction	Mean	VI	Rank
I understand how the PEOs of the College were formulated	4.00	GE	10
I understand the alignment of PEO to IILO, CLO and PI through curriculum mapping	3.77	GE	12
I know how Course Learning Outcomes were developed using Bloom's Taxonomy	4.08	GE	8.5
I understand how the OBE process is being facilitated in the university	4.23	GE	4.5
I have clear understanding on how to do the OBE assessment	3.31	ME	14
I am aware in the use of the following direct assessment techniques in assessing the course learning outcomes:			
Quizzes	4.15	GE	6.5
Activities/Exercises	4.15	GE	6.5
Major Examinations	4.38	GE	2
Assignments and Projects	4.23	GE	4.5
Laboratory Experiments	4.46	GE	1
I understand the principle of making and using the rubric for assessment	3.62	GE	13
I know how to apply the OBE in constructing Major examinations	3.85	GE	11
I know how to deliver instructions through student – centered approach	4.31	GE	3
I am ready to apply the OBE curriculum in the delivery of my instructions	4.08	GE	8.5
Composite Mean	**4.04**	**GE**	

There is a great extent in the level of awareness of the engineering faculty members in the use of laboratory experiments and major examinations as direct assessment techniques in assessing the course learning outcomes as denoted by the computed weighted mean score of 4.46 and 4.38 on rank number 1 and 2, respectively.

There is also a great extent in the knowledge of respondents in terms of knowing how to deliver instructions through student – centered approach and understanding how the OBE process is being facilitated in the university as well as the level of awareness in the use of assignments and projects, quizzes and activities/exercises as direct assessment techniques in OBE as indicated by the weighted mean scores of 4.31, 4.23, 4.23, 4.15 and 4.15 on rank numbers 3, 4.5, 4.5, 6.5 and 6.5, respectively.

They know how CLOs were developed using Bloom's Taxonomy and They are ready to apply the OBE curriculum in the delivery of instructions as denoted by the computed weighted mean score of 4.08 on rank number 8.5 with great extent verbal interpretation.

There is also a great extent on the understanding of the faculty members on how the PEOs of the college were formulated and knowing how to apply the OBE in constructing major examination as manifested by the weighted mean scores of 4.00 and 3.85 on rank number 10 and 11, respectively.

Understanding the alignment of PEO to IILO, CLO and PI through curriculum mapping and the principle of making and using the rubric for assessment obtained the least weighted mean score of 3.77 and 3.62 with great extent verbal interpretation on rank number 12 and 13, respectively. Meanwhile, having clear understanding on how to do the OBE assessment obtained the least weighted mean scores of 3.31 among the 14 statements with moderately extent verbal interpretation. Well-defined assessment criteria, making it clear to both assessors and learners how assessment will take place, are an utmost advantage of Outcome-Based Education. However, requiring that all learning material be rewritten which requires a major investment in time and resources, the utmost disadvantages of OBE (Caguitla et. al. 2013).

The computed composite mean score of 4.04 implies that there is a great extent on the knowledge of the OBE implementation among the faculty members of the College of Engineering. This is the result of the efforts of the management in providing series of seminars for the faculty members and staff on how the OBE would be implemented on different levels and areas of instruction and school management. Since the bulk of the implementation belongs to the faculty members, more emphasis on developing their knowledge and skills on how to deliver and document each process of OBE must be addressed properly.

Table 2 presents the practice of OBE implementation through instruction among the faculty members of the College of Engineering.

Table 2
Practice of OBE Implementation through Instruction

Practice of OBE Implementation through Instruction	Mean	VI	Rank
I participated in the formulation of the PEOs of the College	4.00	GE	9.5
I have made syllabi that show the relationship of PEO to IILO, CLO and PI	4.31	GE	5
I have syllabi that show Course Learning Outcomes	4.77	VGE	1
I have attended series of seminars and discussions regarding OBE in the University	4.38	GE	2.5
I have evidence to show the OBE assessment of my students	3.92	GE	11
Aside from the class record, I have documents to show the use of the direct assessment techniques following the OBE format for evaluating the:			
6.1 Quiz,	4.23	GE	7.5
6.2 Activities/Exercises	4.38	GE	2.5
6.3 Major Examination	4.31	GE	5
6.4 Assignments and Projects	4.31	GE	5
6.5 Laboratory Experiments	4.00	GE	9.5
I have records or documents to show the use of Rubrics	3.54	GE	14
I have table of specifications that clearly shows the relationship of course learning outcomes to PI	4.23	GE	7.5
I have sample documents to prove in the conducted TLA through student-centered approach	3.77	GE	13
I have used different techniques related to OBE in the delivery of my instructions	3.85	GE	12
Composite Mean	**4.14**	**GE**	

There is a very great extent on the practice of the Faculty Members in terms of having syllabi that show Course Learning Outcomes as denoted by the computed weighted mean score of 4.77 on rank number 1, followed by a great extent of having attended series of seminars and discussion regarding OBE in the university and having an awareness on activities/ exercises as direct assessment techniques of OBE as indicated by the weighted mean score of 4.38 on rank number 2.5.

Furthermore, there is also a great extent on their practice in terms of having made syllabi that show the relationship of PEO to IILO, CLO and PI; awareness on major examination as well as in assignment and projects as direct assessment technique in OBE as indicated by the weighted mean score 4.31 on rank number 5.

Having utilized the quizzes as direct assessment technique on OBE and table of specifications that clearly shows the relationship of course learning outcomes to PI obtained a great extent rating from the respondents with 4.23 weighted mean score on rank number 7.5.

Meanwhile, there is a great extent on the participation of the faculty members in the formulation of the PEOs of the college and the respondents' utilization of the Laboratory experiments as direct assessment technique in OBE with weighted mean score of 4.00 on rank number 9.5.

They also have evidence to show the OBE assessment of my students and they used different techniques related to OBE in the delivery of instructions as denoted by the weighted mean scores of 3.92 and 3.85 with great extent verbal interpretation on rank numbers 11 and 12, respectively.

Having sample documents to prove in the conducted TLA through student-centered approach and records or documents to show the use of Rubrics obtained the least weighted mean scores of 3.77 and 3.54 which signified that these are the least being practiced by the faculty members of the College of Engineering.

The composite mean score of 4.14 implies that the faculty members are greatly practicing the OBE in the delivery of their instruction as well as in the documentation of the evidence to show its implementation. This study also confirmed the practice of Maritime Faculty Member in LIMA in the use of varied classroom teaching and learning activities towards more student-centered activities (Guico & Dolor, 2013).

Table 3
Relationship between Knowledge vs Practice of OBE Implementation

	r-value	**p-value**	**Remarks**
K1 vs. P1	.559(*)	0.047	Significant
K2 vs. P2	.645(*)	0.017	Significant
K3 vs. P3	.558(*)	0.047	Significant
K4 vs. P4	.822(**)	0.001	Significant
K5 vs. P5	.644(*)	0.017	Significant
K6.1 vs. P6.1	-.366	0.218	Not Significant
K6.2 vs. P6.2	-.423	0.150	Not Significant
K6.3 vs. P6.3	.297	0.324	Not Significant
K6.4 vs. P6.4	-.278	0.357	Not Significant
K6.5 vs. P6.5	.000	1.000	Not Significant
K7 vs. P7	.328	0.273	Not Significant
K8 vs. P8	.295	0.328	Not Significant
K9 vs. P9	.715(**)	0.006	Significant
K10 vs. P10	.780(**)	0.002	Significant

*** Correlation is significant at the 0.01 level (2-tailed).*
** Correlation is significant at the 0.05 level (2-tailed).*

There is a significant relationship between knowledge and practice in terms of formulation of PEOs of the College, alignment of PEO to IILO, CLO and PI through curriculum mapping, development of Course Learning Outcomes using Bloom's Taxonomy, how the OBE process is being facilitated in the university, clear understanding on how to do the OBE assessment, delivery of instructions through student – centered approach, and application of the OBE curriculum in the delivery of instructions as denoted by the computed p-values which are less

than the 0.05 level of significance. Therefore, the null hypothesis is rejected on these indicators.

This signifies that the higher the knowledge or understanding of Engineering faculty members, there is also a tendency of obtaining higher extent of application through practice in the OBE implementation.

However, there is no significant relationship in the awareness and application in the use of direct assessment techniques in assessing the course learning outcomes as well as having records or documents to show the use of rubrics and having table of specifications that clearly shows the relationship of course learning outcomes to PI as denoted by the computed p-values which are greater than 0.05 level of significance. Therefore, the null hypothesis for these indicators is accepted. This implies that faculty members may possess appropriate knowledge in certain area of the OBE implementation but not being practiced.

Conclusions and Recommendations

There is a great extent in terms of knowledge and practice on OBE implementation among the faculty members of the College of Engineering, however there is a moderate extent on the level of understanding of faculty members on the appropriate assessment method to be utilized.

Faculty members with high level of knowledge and understanding on the implementation of OBE have also higher possibility to contribute in the realization of the objectives of OBE through practice.

The proposed program focused on the assessment and continuous documentation of evidence of the OBE implementation.

Continuous participation of the faculty members in training and seminars is highly encouraged to provide them updates of the OBE process through the assistance of the Director for Instruction. Provide more assistance to the faculty members without evidence of item analysis. Ensure that the data bank of good questions are being updated and kept in a secured repository or database so that students would not be able to access the files from the computer units of the department secretaries.

Research being one of the tri-focal functions of a university requires individuals capable enough in producing quality researches that would substantiate academic achievement and excellence (Abarquez & Palbacal, 2013). Conducting relevant researches as part of the culminating activity of each course could provide a strong evidence of OBE.

The proposed action plan may be implemented and evaluated to ensure its utilization and effectiveness. Provide follow-up studies regarding the problems encountered by the faculty members in submitting the OBE requirements.

References

Abarquez, R. R., Palbacal, J. A. (2013). Research Capabilities of International Tourism and Hospitality Management Faculty Members, Journal of International Academic Research for Multidisciplinary, 1(7): 185-194.

Bay Jr., Bernardo E. (2013). Integration of Technology-Driven Teaching Strategies for Enhancing Photojournalism Course, Educational Research International, 2 (2): 155-164.

Bialobrzeska, Maryla (2006), "Facilitating Outcomes Based Learning and Teaching A Guide for Trainers and FET College Lecturers", The South African Institute for Distance Education (SAIDE)

Biggs, John and Tang, Catherine (2010). Teaching for Quality Learning at University. 4th edition. Berkshire, England.

Caguimbal, D. A., Delacion, D. C., Medina, A.O., Mendoza, M. S., Mendoza, R. J. M., Sanchez, M. M. (2013). Level of Awareness of the Maritime Students on the Outcomes Based Education, Educational Research International, 2(1):7-12

CHED MEMORANDUM ORDER (CMO), No.77 , Series of 2012, "Policies, Standards and Guidelines in the Establishment of an Outcomes-Based Education (OBE) System in Higher Education Institutions Offering Engineering Programs".

Davis, M. H. (2003). *Outcome-Based Education,* Educational Strategies, available online:http://www.utpjournals.com/jvme/tocs/303/258.pdf

Ditan, A. N., Aguba, J. R. L. (2013). Status of Lyceum of the Philippines University Customs Education: Basis for Strategic Marketing Plan, E – International Scientific Research Journal, V(1): 91-120.

Gomez, M. J. S., Panaligan, C. (2013). Level of research Competencies and Satisfaction of the Faculty Members from the College of Criminology, Asian Academic Research Journal of Social Sciences & Humanities, 1(14): 269-280.

Guico, T. M., & Dolor, G. (2013). Level of Awareness and Possible Concerns of the Marine Faculty Members on Outcomes-Based Education, Journal of International Academic Research for Multidisciplinary, 1(7): 159 – 167

Javier, F. V. (2012). Assessing an Asian University's Organizational Effectiveness Using the Malcolm Baldridge Model, Asian Journal of Business and Governance, Vol. 2: 37-55.

Killen, R. (2000). *Outcomes-based education: Principles and possibilities* Unpublished manuscript, University of Newcastle, Faculty of Education.

Macatangay, L. (2013). Tracer Study of BSCS Graduates of Lyceum of the Philippines University From 2004-2009, Academic Research International, 4(5): 361-377.

OBE Committee. (2012), "OBE Implementation Guidebook 2nd Edition" , Faculty of Electrical & Electronic Engineering of Universiti Tun Hussein Onn Malaysia.

Patena, A. D., Dinglasan, B. L. H. (2013). Students' Performance on Mathematics Departmental Examination: Basis for Math Intervention Program, Asian Academic Research Journal of Social Sciences & Humanities, 1(14): 255-268.

Washington Accord, available online: http://www.washingtonaccord.org/Washington-Accord/signatories.cfm, date retrieved: August 31, 2013.