

STATUS OF IMPLEMENTATION AND USEFULNESS OF OUTCOMES-BASED EDUCATION IN THE ENGINEERING DEPARTMENT OF AN ASIAN UNIVERSITY

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ABSTRACT

This study determined the status of Outcomes-based Education (OBE) implementation in terms of practices and environment as well as its usefulness in the Engineering Department of an Asian University in terms of academic, attitude and instruction; and to test the relationship between the status of OBE implementation and the level of its usefulness. This study used a descriptive method of research wherein the quantitative data were gathered using a survey questionnaire. Results show that OBE is being implemented in terms of practices and environment. Faculty members together with the students and concerned authorities shall have coordination to identify the needs of the students and to provide possible solutions and actions to enhance the implementation of the new learning system. They shall be representatives in conducting seminars and training that would provide appropriate knowledge and skills for the engineering students who are ready to face the challenges of ASEAN 2015.

Keywords: Outcomes-Based Education, Academic Instruction, Engineering.

INTRODUCTION

Education aims to provide learnings and knowledge, also to enhance the skills and abilities of every student, to bring competence, and guide them with positive attitude and values. Quality education considered as an important factor to produce competent professionals in order to build a strong nation and to bring out the best way to get along with global competition. 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 & Tang, 2010). In trying to strengthen the quality assurance system in Philippine higher education, institutions of higher learning were mandated to upgrade higher education curricular offerings to international standards (Valdez, 2012a).

There are different ways and strategies of learnings that can be applied with different type of individual in different circumstances. In the Philippines most students are engaged in traditional method of teaching while others are up to home schooling, tutoring, and online education.

Outcome-based education is an approach to education as well as a type of learning process wherein 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). Spady (1994) stated that outcome-based education is designed so that all students are equipped with the knowledge, skills and qualities needed to be successful after they exit the educational system. In this system, students can excel with their own interest and acquired knowledge in different ways in no particular time.

Spady's "OBE Paradigm" (1994) is based on three premises and four principles. These premises are: all students can learn and succeed but not on the same day and not in the same way; Successful learning promotes even more successful learning; and schools control the conditions that affect directly affect successful learning (Goff, 2010).

Dr. William Spady, the father of OBE, proposed three basic assumptions: all learners can learn and succeed; success breeds success and "teaching institutions control the conditions of success. The OBE focuses on what the learners should learn which is opposite to the traditional education planning. In OBE, what the learners should learn must be identified first, followed by how they are going to learn these. The assessment and teaching strategies will be dependent on the desired learning outcomes unlike in the traditional planning, the lessons that should be learned will be identified first and from these lessons the outcomes will be identified (Acharya, 2003).

In international arena, Outcome-Based Education is applied to create a competitive advantage among other countries as early as 1980's. It is a process that involves reporting reaction in education to reflect the achievement of high order learning and mastery rather than the accumulation of course credits (Tucker, 2004).

To be able to cope up with the international standards of foreign universities and colleges, higher education in the Philippines are seeking new ways of designing education to improve the existing educational system of the country as well as to prepare students in facing the challenges of the 21st century.

Implementation of Outcomes-Based Education (OBE) is the main concerned of most higher education institutions in the Philippines today (Davis, 2003; Caguitla, et. al 2013). 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).

In Lyceum of the Philippines University-Batangas, OBE started in 2011 to become part of the discussions in forums and convention. The University like many other universities in Asia deals with rapid and continuous challenges brought about by technological advancements and global demands. Javier (2012) stated that as an educational institution it has to deliver the products and services necessary to achieve the outcomes it intends to produce.

Outcomes-Based Education provides another way in similar perspective of assessing the performance of the university students (Camello, 2014). Rubrics is another model use in assessment of student outcomes. It is used when judging the quality of the work of the learners on performance assessments (Gabuyo, 2012). According to Suskie (2009) rubrics help clarify vague, fuzzy goals, help students understand your expectations, help students self-improve, inspire better student performance, make scoring easier and faster, make scoring more accurate, unbiased, and consistent, improve feedback to students, reduce arguments with students, improve feedback to faculty and staff.

Peer review allows students to experience first-hand the "collaborative process of construction and refinement of knowledge, the subjective nature of evaluation and peer review, and the role of creativity in research" (Trautmann et al., 2003). According to Gehringer (2000), peer review can be applied to a variety of assignments in introductory level courses and beyond.

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). Knowing the usefulness and importance of OBE greatly affects the extent of its implementation in an institution. 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. (Caguitla, 2013).

Laurel emphasized 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). E-portfolios have been used to document student work to demonstrate learning (Smith & Winking-Diaz, 2004). Unlike paper-based portfolios, e-portfolios allow information to be stored, accessed, updated, and presented in various electronic formats to record students achievements. E-portfolios enable students to improve and focus their learning and provide them with a tool to showcase their skills. This enables students to update their work and reflect on their learning (Tubaishat et al. 2009)

Since LPU is implementing OBE, it is very essential to go in-depth into the level of usefulness of OBE and its status of implementation as perceived by its students. In determining the relationship between the two, the institution can now formulate plans to find solutions on the identified concerns or problems and guide the students to cope up with the new educational approach.

OBJECTIVES OF THE STUDY

The study aimed to determine the status of implementation and usefulness of OBE in the Engineering Department of LPU Batangas. This study specifically aimed to determine the status of implementation of OBE as perceived by the engineering students in terms of practices and environment; to determine the level of usefulness of OBE in terms of academics, attitudes and instruction; to test the significant relationship between the extent of implementation and the level of usefulness of OBE in the engineering department; and to propose an action plan to address the identified concerns in the implementation of OBE

Ho: There is no significant relationship between the level of usefulness and extent of implementation of OBE in the Engineering Department.

METHODS

Research Design

This study used a descriptive method of research wherein the quantitative data were gathered using a survey questionnaire to determine the level of usefulness of OBE and the extent of its implementation at LPU-B as well as the significant relationship between the two.

Respondents of the Study

The respondents of the study consist of 62 engineering students. Proportional Stratified Random sampling is applied given that 39 percent of the final sample were came from each year from third year to fifth year engineering students resulting to 18 third year students, 25 fourth year and 19 students will come from the fifth year. By the use of systematic random sampling, the respondents were chosen according to their sequence number from an alphabetical order list of students, regardless of their degree program. Only the even number will be considered the respondents of the study.

Instrument

The researchers used questionnaire which is modified based from the previous researches related to the study and individual questions made by the researchers. The researchers consulted their adviser in the preparation of the questionnaire, which has two parts. The first part consists of questions about the status of implementation of OBE as perceived by the engineering students in terms of practice and environment respectively. The second part consists of questions about the level of usefulness of OBE in terms of academics, attitudes and instruction respectively. The questionnaire was validated by the adviser and Research director through content validation and was undergone through test – retest analysis and obtained high reliability score.

Procedures

The researchers personally distributed the questionnaires to 62 selected engineering students of Lyceum of the Philippines University- Batangas with the content of the questionnaires explained to them clearly and stated that answers will be treated with confidentiality and will be used for this study only. One hundred percent retrieval rating of the accomplished questionnaires was done immediately after the distribution.

Statistical Treatment

Weighted Mean was applied to consolidate the answers of respondents to each question. Ranking was used to derive the highest and lowest points of weighted mean from the set perceptions and determinants of OBE. Composite Mean was used to get the average mean to come up with the general result of students' response for each part of the questionnaire. It was used to determine the usefulness of OBE and the status of its implementation. Inferential statistics was used in this study such as Pearson Product Moment Correlation Coefficient. It was used to test the significant relationship between the usefulness of OBE and its extent of implementation. Analysis of Variance (ANOVA) was also used to test the difference in given

variables of three groups of respondents in this study such as the third year, fourth year and fifth year engineering students. Likert Scale was used with corresponding values from 1 to 4 scales, one being the lowest and four being the highest. The computed mean ratings were evaluated according to the following interval scale as follows: 3.50 – 4.00: Very Useful (VU)/ Highly Implemented (HI); 2.50 – 3.49: Useful (U)/ Implemented(I); 1.50 – 2.49: Less Useful (LU)/Less Implemented (LI); 1.00 – 1.49: Not Useful (NU)/Not Implemented (NI).

RESULT AND DISCUSSION

Table 1 shows the status of Outcome-Based Education Implementation in terms of Practice.

Table 1: Status of OBE Implementation in Terms of Practices

Practices	WM	VI	Rank
1. OBE ensures that the learners know exactly what is expected from them as unit standards make it very clear what is required from them.	3.34	Implemented	2.5
2. OBE provides well-defined assessment criteria that are clear to both assessors and learners on how assessment will take place.	3.29	Implemented	4
3. OBE ensures a more objective assessment and fair result of the predetermined criteria.	3.24	Implemented	5
4. OBE provides a chance for the students to undergo remedial or other corrective actions for learning	3.34	Implemented	2.5
5. OBE requires the students to keep their exams and activities in a portfolio for analysis	3.52	Highly Implemented	1
Composite Mean	3.35	Implemented	

Table 1 shows the status of OBE implementation in terms of practices. It is highly implemented in requiring the students to keep their exams and activities in a portfolio for analysis while it is implemented in ensuring that the learners know exactly what is expected from them as unit standards make it very clear what is required from them obtained and providing a chance for the students to undergo remedial or other corrective actions for learning. Providing well-defined assessment criteria that are clear to both assessors and learners on how assessment will take place is also being implemented. Ensuring a more objective assessment and fair result of the predetermined criteria obtained the least weighted mean score which is also being implemented. The composite mean score of 3.35 signifies that OBE Practices in engineering department is being implemented.

Engineering Department of LPU-B requires the students to keep all the exams, activities, and assignments in a portfolio for analysis by using a monitoring sheet. Engineering students are not aware that OBE ensures a more objective assessment and fair result of predetermined criteria due to minimal orientations. OBE implementation in terms of practices is more evident in requiring the students to keep their exams and activities in a portfolio for analysis. It shows that engineering students of LPU- B is practicing the requirements associated with the OBE as the new learning system of the institution.

Engineering is considered one of the hardest degree programs in college considering its number of years to finish which is one year longer than the usual four-year degree programs (Laguador, 2013a). Students should improve the way of learning in many ways to be able to

adapt quickly, more so, they should exert more effort, given that engineering is really a difficult one (Abanador et al, 2014).

Table 2 presents the status of Outcomes-Based Education Implementation in terms of Environment.

Table 2: Status of OBE Implementation in Terms of Environment

Environment	WM	VI	Rank
1. There is greater support for OBE from all role- players due to the extensive level of consultation and stakeholder involvement.	3.19	Implemented	5
2. OBE fosters a better integration between education at school and industry	3.31	Implemented	4
3. OBE provides learning environment that caters the development of students as future professionals	3.42	Implemented	1
4. OBE promotes values formation and character traits ideal to different employment settings	3.40	Implemented	2
5. OBE ensures better way of delivering instruction through appropriate teaching methodology and classroom management	3.32	Implemented	3
Composite Mean	3.33	Implemented	

Table 2 shows the status of OBE implementation in terms of environment. OBE provides learning environment that caters the development of students as future professionals which is being implemented. Promoting values formation and character traits ideal to different employment settings is one objective of OBE which is being implemented in the department under study while ensuring better way of delivering instruction through appropriate teaching methodology and classroom management is also being implemented. Fostering a better integration between education at school and industry is another objective which is also being implemented. There is greater support for OBE from all role- players due to the extensive level of consultation and stakeholder involvement which ranked last with weighted mean of 3.19 which signifies implemented.

The composite mean obtained 3.33 signifies moderately implemented. The data above showed that Outcomes-based Education is implemented in terms of environment in the Engineering department of LPU-B. LPU provides a conducive learning facility that caters the development of students as future professionals. On the other hand students are not fully aware about the support from all role players and stakeholders' involvement because of minimal orientations and seminars. The respondents believe that OBE is capable of providing a learning environment that will help them develop their skills and promotes character formation as future professionals.

It is very important that the management will always make sure that these facilities and services are always available, adequate and in good running condition to better facilitate learning between the teachers and the students thereby the goal of attaining quality education for the graduates is always achieved (Valdez, 2012b). The factors that greatly affect the learning of General Engineering students are physical and environmental factors, thus environmental factors has a greater impact to their learning compared to physical factors (Abante, et al (2014).

Table 3 presents the level of Usefulness of Outcomes-based Education in terms of Academics. Table 3 shows the level of usefulness of OBE in terms of academics. The respondents considered OBE as useful in helping the students measure their own performance and developing their study habits. Engineering students have high level of study habits at home and very high at school (Laguador, 2013b). OBE is also useful in promoting the responsiveness of the school activities towards the enhancement of students' academic performance and strengthening the capabilities and skills of the students.

Table 3: Level of Usefulness of OBE in Terms of Academics

Academics: OBE is useful in...	WM	VI	Rank
1. Helping the students measure their own performance	3.35	Useful	1.5
2. Promoting the responsiveness of the school activities towards the enhancement of students' academic performance	3.32	Useful	3.5
3. Developing the study habits of the students	3.35	Useful	1.5
4. Strengthening the capabilities and skills of the students	3.32	Useful	3.5
Composite Mean	3.34	Useful	

The composite mean score of 3.34 signifies that the OBE is considered useful in the area of academics. This shows that engineering students in LPU –B have a clear perception that OBE is useful in terms of academics. Engineering students believe that OBE develops the study habits of students and helping the students measure their own performance because of assessment examinations and portfolios which are required to students. Engineering students are not fully aware that OBE strengthens their capabilities and skills in promoting the responsiveness of the school activities towards the enhancement of students' academic performance because of unclear perception of the purpose of OBE in students' mind.

First year engineering students are still in the period of adjustment, faculty members must be considerate enough in giving them adequate and reasonable time to prepare for examination and submit their assignments and projects (Laguador, 2013c).

Table 4 presents the level of Usefulness of Outcomes-based Education in terms of Attitude.

Table 4: Level of Usefulness of OBE in Terms of Attitude

Attitude: OBE is useful in...	WM	VI	Rank
1. Challenging the students to become more competitive	3.40	Useful	2
2. Practicing collaboration rather than competition	3.23	Useful	5
3. Creating a mindset towards a clear direction of learning	3.26	Useful	4
4. Motivating the students to be independent	3.29	Useful	3
5. Helping learners to accept responsibility for learning, as they are now at the center of the learning process.	3.44	Useful	1
Composite Mean	3.32	Useful	

Table 4 shows the status of OBE implementation in terms of attitude. OBE is useful in helping learners to accept responsibility for learning, as they are now at the center of the learning process and in challenging the students to become more competitive. It is also useful in motivating the students to be independent and in creating a mindset towards a clear direction of learning and in practicing collaboration rather than competition. The composite mean scores of 3.32 signifies that the OBE is useful in developing the attitude of the engineering students.

The development of well-rounded personality with a healthy outlook and orientation towards intelligent, ethical, and active participation in professional as well as community welfare activities and the development of critical thinking skills that will enable them to participate in research activities and respond to challenges of the profession (Valdez et al, 2012). Students sometimes get bored and they feel like irritated until they finally submit their papers with incomplete solutions without discussion of results (Laguador, 2013d)

Table 5 presents the level of usefulness of Outcomes-based Education in terms of Instruction.

Table 5: Level of Usefulness of OBE in Terms of Instruction

Instruction: OBE is useful in..	WM	VI	Rank
1. Requiring faculty members to master their subjects being handled.	3.23	Useful	4.5
2. Implifying the execution of the lessons	3.27	Useful	3
3. Asking the teachers more of a facilitator than a lecturer.	3.34	Useful	2
4. Creating a conducive atmosphere for teaching and learning process	3.23	Useful	4.5
5. Improviding learning skills necessary for the industry	3.37	Useful	1
Composite Mean	3.29	Useful	

Table 5 shows the level of usefulness of Outcome-based Education in terms of Instruction. OBE is considered useful in improving learning skills necessary for the industry and in making the teachers more of a facilitator than a lecturer. It is also considered useful in simplifying the execution of the lessons and requiring faculty members to master their subjects being handled. In creating a conducive atmosphere for teaching and learning process, OBE is also considered useful by the respondents. The composite mean score of 3.29 implies that the OBE is useful in delivering appropriate instruction. Students believe that OBE is useful in providing learning skills necessary for the industry since OBE develops the skills of every student and enhances using the new learning system.

Commitment to accomplish a certain task within the specified period of time must be strongly acquired by the students in submitting their school assignments, activities and projects (Laguador, 2013e).

Table 6 presents the significant relationship between the level of usefulness and status of implementation of OBE in the Engineering Department of LPU- B.

Table 6: Significant Relationship Between the Level of Usefulness and Status of Implementation of OBE in the Engineering Department

	Practices			Environment		
	r-value	p-value	Decision	r-value	p-value	Decision
Academics	.589(**)	.000	Rejected	.594(**)	.000	Rejected
Attitude	.646(**)	.000	Rejected	.509(**)	.000	Rejected
Instruction	.474(**)	.000	Rejected	.636(**)	.000	Rejected

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

Table 6 shows that there is a significant relationship between the usefulness and implementation of Outcomes-based education in the College of Engineering as denoted by the computed p-values which are less than the 0.01 level of significance, therefore, null

hypothesis of no significant relationship is rejected. The usefulness of OBE in terms of academics, attitude and instruction is directly related to its implementation in terms of practices and environment. This shows that the higher the implementation of OBE, the higher the results or being useful of OBE in terms of academics, attitude and implementation.

Action Plan addressed the identified concerns in the implementation of OBE in the engineering department. The items which obtained the least weighted mean are chosen to be the focus of improvement and considered as the objective of the proposed action plan. The table shows the suggested activity for each objective, the responsible for its execution, the time table, the resources needed and the performance indicator. This action plan aims to improve and enhance the identified concerns regarding the implementation of OBE in specific areas.

CONCLUSIONS

The respondents believed that Outcomes-Based Education is being implemented in terms of practices and environment. The respondents believed that Outcomes-Based education is useful in terms of academics, attitude and instructions. There is a significant relationship between the status of OBE implementation and the level of usefulness of Outcomes-Based Education in the Engineering Department of LPU-Batangas. Practice, seminars, intensive orientation of syllabus and assessment procedure and conducting field trips and training may be proposed to enhance and improve the knowledge and skills of students to meet the requirements of the new learning system.

RECOMMENDATIONS

The college should have a continuous and sustainable monitoring of the implementation of OBE through the use of data base system. Improve the monitoring system of the implementation of OBE through seminars and additional assessment examination. The engineering curriculum must always be updated with the current trends and needs of the industry. The curriculum should be designed to prepare the graduates and demonstrate the core competencies expected of them in the workplace (Valdez, 2010).

The Faculty and students should attend seminars that will gain knowledge for the implementation of OBE to easily develop a solution or action for its effective implementation. There might have parents' involvement and attendance in every meeting and seminar to help the college in encouraging the students to understand the essence of OBE and to monitor their own performance. Conduct a related study about the significant relationship between the implementation and usefulness of OBE and the different Engineering program, to provide additional information and learning that will help the College to identify possible modifications and improvements.

The Engineering College Council and recognized engineering student organization may provide co-curricular activities that would allow maximum participation of the students to experience different challenges in engineering towards a better appreciation of their currently enrolled degree program (Ramirez & Dizon, 2014) through Outcomes-Based Education. Knowing the students better through interviews will give surface analysis of problems that will open to a deeper sense and cause of the academic dilemma inside the classroom (Laguador & Pesigan, 2013).

Students must be given enough assignments, projects and exercises to work on during their spare time and at home to practice whatever they have learned during classroom discussion (Laguador, 2013f).

The action plan may be implemented, monitored and evaluated to test its usefulness and effectiveness to the College of Engineering. Future Researchers might conduct related or follow-up study about the implementation and level of usefulness of OBE in Engineering Department of LPU-B and conduct related study to other Department.

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