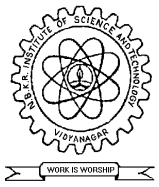
OUTCOME BASED EDUCATION(OBE)



N.B.K.R. INSTITUTE OF SCIENCE &TECHNOLOGY : : VIDYANAGAR
(AUTONOMOUS)

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Outcome-based education

Outcome-based education (OBE) is an educational theory that bases each part of an educational system around goals (outcomes). By the end of the educational experience, each student should have achieved the goal. There is no single specified style of teaching or assessment in OBE; instead, classes, opportunities, and assessments should all help students achieve the specified outcomes. The role of the faculty adapts into instructor, trainer, facilitator, and/or mentor based on the outcomes targeted.

Outcome-based methods have been adopted in education systems around the world, at multiple levels. Australia and South Africa adopted OBE policies in the early 1990s but have since been phased out. The United States has had an OBE program in place since 1994 that has been adapted over the years. In 2005, Hong Kong adopted an outcome-based approach for its universities. Malaysia implemented OBE in all of their public schools systems in 2008.[1] The European Union has proposed an education shift to focus on outcomes, across the EU. In an international effort to accept OBE, The Washington Accord was created in 1989; it is an agreement to accept undergraduate engineering degrees that were obtained using OBE methods. As of 2017, the full signatories are Australia, Canada, Taiwan, Hong Kong, India, Ireland, Japan, Korea, Malaysia, New Zealand, Russia, Singapore, South Africa, Sri Lanka, Turkey, the United Kingdom, Pakistan, China and the United States.

Differences from traditional education methods

In a regional/local/foundational/electrical education system, students are given grades and rankings compared to each other. Content and performance expectations are based primarily on what was taught in the past to students of a given age of 12-18. The goal of this education was to present the knowledge and skills of an older generation to the new generation of students, and to provide students with an environment in which to learn. The process paid little attention (beyond the classroom teacher) to whether or not students learn any of the material.

Benefits of OBE

Clarity

The focus on outcomes creates a clear expectation of what needs to be accomplished by the end of the course. Students will understand what is expected of them and teachers will know what they need to teach during the course. Clarity is important over years of schooling and when team teaching is involved. Each team member, or year in school, will have a clear understanding of what needs to be accomplished in each class, or at each level, allowing students to progress. Those designing and planning the curriculum are expected to work backwards once an outcome has been decided upon; they must determine what knowledge and skills will be required to reach the outcome.

Flexibility

With a clear sense of what needs to be accomplished, instructors will be able to structure their lessons around the student's needs. OBE does not specify a specific method of instruction, leaving instructors free to teach their students using any method. Instructors will also be able to recognize diversity among students by using various teaching and assessment techniques during their class. OBE is meant to be a student-centered learning model. Teachers are meant to guide and help the students understand the material in any way necessary, study guides, and group work are some of the methods instructors can use to facilitate students learning.

Comparison

OBE can be compared across different institutions. On an individual level, institutions can look at what outcomes a student has achieved to decide what level the student would be at within a new institution. On an institutional level, institutions can compare themselves, by checking to see what outcomes they have in common, and find places where they may need improvement, based on the achievement of outcomes at other institutions. The ability to compare easily across institutions allows students to move between institutions with relative ease. The institutions can compare outcomes to determine what credits to award the student. The clearly articulated outcomes should allow institutions to assess the student's achievements rapidly, leading to increased movement of students. These outcomes also work for school to work transitions. A potential employer can look at records of the potential employee to determine what outcomes they have achieved. They can then determine if the potential employee has the skills necessary for the job.

Involvement

Student involvement in the classroom is a key part of OBE. Students are expected to do their own learning, so that they gain a full understanding of the material. Increased student involvement allows students to feel responsible for their own learning, and they should learn more through this individual learning. Other aspects of involvement are parental and community, through developing curriculum, or making changes to it. OBE outcomes are meant to be decided upon within a school system, or at a local level. Parents and community members are asked to give input in order to uphold the standards of education within a community and to ensure that students will be prepared for life after school.

Drawbacks of OBE

Definition

The definitions of the outcomes decided upon are subject to interpretation by those implementing them. Across different programs or even different instructors outcomes could be interpreted differently, leading to a difference in education, even though the same outcomes were said to be achieved. By outlining specific outcomes, a holistic approach to learning is lost. Learning can find itself reduced to something that is specific, measurable, and observable. As a result, outcomes are not yet widely recognized as a valid way of conceptualizing what learning is about.

Assessment problems

When determining if an outcome has been achieved, assessments may become too mechanical, looking only to see if the student has acquired the knowledge. The ability to use and apply the knowledge in different ways may not be the focus of the assessment. The focus on determining if the outcome has been achieved leads to a loss of understanding and learning for students, who may never be shown how to use the knowledge they have gained. Instructors are faced with a challenge: they must learn to manage an environment that can become fundamentally different from what they are accustomed to. In regards to giving assessments, they must be willing to put in the time required to create a valid, reliable assessment that ideally would allow students to demonstrate their understanding of the information, while remaining objective.

Generality

Education outcomes can lead to a constrained nature of teaching and assessment. Assessing liberal outcomes such as creativity, respect for self and others, responsibility, and self-sufficiency, can become problematic. There is not a measurable, observable, or specific way to determine if a student has achieved these outcomes. Due to the nature of specific outcomes, OBE may actually work against its ideals of serving and creating individuals that have achieved many outcomes.

Involvement

Parental involvement, as discussed in the benefits section can also be a drawback, if parents and community members are not willing to express their opinions on the quality of the

education system, the system may not see a need for improvement, and not change to meet student's needs. Parents may also become too involved, requesting too many changes, so that important improvements get lost with other changes that are being suggested. Instructors will also find that their work is increased; they must work to first understand the outcome, then build a curriculum around each outcome they are required to meet. Instructors have found that implementing multiple outcomes is difficult to do equally, especially in primary school. Instructors will also find their work load increased if they chose to use an assessment method that evaluates students holistically.

Adoption and removal

Australia

In the early 1990s, all states and territories in Australia developed intended curriculum documents largely based on OBE for their primary and secondary schools. Criticism arose shortly after implementation. Critics argued that no evidence existed that OBE could be implemented successfully on a large scale, in either the United States or Australia. An evaluation of Australian schools found that implementing OBE was difficult. Teachers felt overwhelmed by the amount of expected achievement outcomes. Educators believed that the curriculum outcomes did not attend to the needs of the students or teachers. Critics felt that too many expected outcomes left students with shallow understanding of the material. Many of Australia's current education policies have moved away from OBE and towards a focus on fully understanding the essential content, rather than learning more content with less understanding.

Western Australia

Officially, an agenda to implement Outcomes Based Education took place between 1992 and 2008 in Western Australia. Dissatisfaction with OBE escalated from 2004 when the government proposed the implementation of an alternative assessment system using OBE 'levels' for years 11 and 12. With government school teachers not permitted to publicly express dissatisfaction with the new system, a community lobby group called PLATO as formed in June 2004 by high school science teacher Marko Vojkavi. Teachers anonymously expressed their views through the website and online forums, with the website quickly became one of the most widely read educational websites in Australia with more 180,000 hits per month and contained an archive of more than 10,000 articles on the subject of OBE implementation. In 2008 it was officially abandoned by the state government with Minister for Education Mark McGowan remarking that the 1990s fad "to dispense with syllabus" was over.

European Union

In December 2012, the European Commission presented a new strategy to decrease youth unemployment rate, which at the time was close to 23% across the European Union [1]. The European Qualifications Framework calls for a shift towards learning outcomes in primary and secondary schools throughout the EU. Students are expected to learn skills that they will need when they complete their education. It also calls for lessons to have a stronger link to employment through work-based learning (WBL). Work-based learning for students should also lead to recognition of vocational training for these students. The program also sets goals for learning foreign languages, and for teachers continued education. It also highlights the

importance of using technology, especially the internet, in learning to make it relevant to students.

Hong Kong

Hong Kong's University Grants Committee adopted an outcomes-based approach to teaching and learning in 2005. No specific approach was created leaving universities to design the approach themselves. Universities were also left with a goal of ensuring an education for their students that will contribute to social and economic development, as defined by the community in which the university resides. With little to no direction or feedback from the outside universities will have to determine if their approach is achieving its goals on their own.[6]

Malaysia

OBE has been practiced in Malaysia since the 1950s; however, as of 2008, OBE is being implemented at all levels of education, especially tertiary education. This change is a result of the belief that the education system used prior to OBE inadequately prepared graduates for life outside of school. The Ministry of Higher Education has pushed for this change because of the number of unemployed graduates. Findings in 2006 state that nearly 70% of graduates from public universities were considered unemployed. A further study of those graduates found that they felt they lacked, job experience, communication skills, and qualifications relevant to the current job market. The Malaysian Qualifications Agency (MQA) was created to oversee quality of education and to ensure outcomes were being reached.[16] The MQA created a framework that includes eight levels of qualification within higher education, covering three sectors; skills, vocational and technical, and academic. Along with meeting the standards set by the MQA, universities set and monitor their own outcome expectations for students

South Africa

OBE was introduced to South Africa in the late 1990s by the post-apartheid government as part of its Curriculum 2005 program. [2], Initial support for the program derived from anti-apartheid education policies. The policy also gained support from the labor movements that borrowed ideas about competency-based education, and Vocational education from New Zealand and Australia, as well as the labor movement that critiqued the apartheid education system. With no strong alternative proposals, the idea of outcome-based education, and a national qualification framework, became the policy of the African National Congress government. This policy was believed to be a democratization of education, people would have a say in what they wanted the outcomes of education to be. It was also believed to be a way to increase education standards and increase the availability of education. The National Qualifications Framework (NQF) went into effect in 1997. In 2001 people realized that the intended effects were not being seen. By 2006 no proposals to change the system had been accepted by the government, causing a hiatus of the program.[3] The program came to be viewed as a failure and a new curriculum improvement process was announced in 2010, slated to be implemented between 2012 and 2014.

United States

In 1983, a report from the National Commission on Excellence in Education declared that American education standards were eroding, that young people in the United States were not learning enough. In 1989, President Bush and the nation's governors set national goals to be achieved by the year 2000. GOALS 2000: Educate America Act was signed in March 1994. The goal of this new reform was to show that results were being achieved in schools. In 2001, the No Child Left Behind Act took the place of Goals 2000. It mandated certain measurements as a condition of receiving federal education funds. States are free to set their own standards, but the federal law mandates public reporting of math and reading test scores for disadvantaged demographic subgroups, including racial minorities, low-income students, and special education students. Various consequences for schools that do not make "adequate yearly progress" are included in the law. In 2010, President Obama proposed improvements for the program. In 2012, the U.S. Department of Education invited states to request flexibility waivers in exchange for rigorous plans designed to improve students' education in the state.

India

India has become the permanent signatory member of the Washington Accord on 13 June 2014.[20] India has started implementing OBE in higher technical education like diploma and undergraduate programs. The National Board of Accreditation, a body for promoting international quality standards for technical education in India has started accrediting only the programs running with OBE from 2013.

The National Board of Accreditation mandates establishing a culture of outcomes-based education in institutions that offer Engineering, Pharmacy, Management programs. Outcomes analysis and using the analytical reports to find gaps and carry out continuous improvement is essential cultural shift from how the above programs are run when OBE culture is not embraced. Outcomes analysis requires huge amount of data to be churned and made available at anytime, anywhere. Such an access to scalable, accurate, automated and real-time data analysis is possible only if the institute adopts either excel sheet based measurement system or some kind of home-grown or commercial software system. It is observed that excel sheet based measurement and analysis system doesn't scale when the stakeholders want to analyze longitudinal data. There are products like in pods which are available in India for implementing a culture of outcomes based education for Engineering, Pharmacy, Management programs.

Origin of the outcome based education (OBE)

OBE has been adopted for more than a century when educators brought to light the importance of appreciating students' individual variation in the learning process, believing that education is best measured by encouraging individual students' achievement that could occur at different rates for different students. OBE allows the students of different abilities to learn at their own rates with an emphasis on programmatic outcome in professional medical knowledge, skills and attitudes.

The concept of OBE was also encouraged by the reform in the health care system that stresses on establishing a common set of standards for doctors with highlighting the fact that professionalism should be an essential competency achieved by the medical student before graduating. With the increasingly global marketplace for higher education , OBE has been adopted by many medical schools with a great interest to ensure that the degrees granted to their students are competitive and accredited internationally and their graduate are competent practicing physicians .

Nature of the outcome based education (OBE)

Outcome-based education approaches the curriculum decision making based on the competencies students should demonstrate at the end of their educational program, thus the outcomes or competencies dictate the curriculum content and organization, the teaching methods and strategies, the course offered, the educational environment and the assessment strategies [8]. All curriculum and teaching decisions are made based on how best to facilitate the desired final outcome [9, 10]**.**

Steps for planning and implementing outcome based curriculum:

1. **Deciding on the outcomes:** the educational outcomes are clearly identified and unambiguously specified regarding the content, context and competence. The US Accreditation Council on Graduate Education [11],lumps the outcomes into a set of general competencies addressing patient care, medical knowledge, practice-based learning and improvement, system-based practice, interpersonal and communication skills and professionalism [12].
2. **Demonstrating outcomes:** the expected outcome should be defined by setting 'benchmarks' for each level of the program. Each benchmark is a skill that must be demonstrated by the student. Benchmarks should tackle and define specifically the goals of the curriculum and verify ways to assess whether students have reached these goals at that level of study.
3. **Deciding on contents and teaching strategies** OBE can be implemented as a 'Whole-class' models which aim to bring all learners in a classroom up to high levels of learning before proceeding further or by the 'Flexible' models which use flexible grouping, continuous progress, technological approaches and instructional management .
4. **Assessments in OBE:** OBE is driven by assessments that focus on well-defined learning outcomes and not by other factors such as what is taught, the duration taken by the

student to achieve the outcomes or which path the students take to achieve their targets [13]. In OBE standard-referenced assessment could be used which is similar to criterion - referenced assessment but with clearer description of expected performance and since OBE requires ongoing feedback between the student and the lecturer, continuous assessments and student portfolios would be of a great help in assessing OBE[12].

Beliefs and Features of Outcome-Based Education (OBE)

Spady, W. D, in his book, "Outcomes Based Education: Critical Issues and Answers" highlighted the following seven Beliefs and Features of Outcome-based Education (OBE) [1].

1. All students can learn and succeed, but not on the same day in the same way.
2. Success breeds success.
3. Schools control the conditions of success.
4. It emphasizes authentic, achievable and assessable learning outcomes.
5. It is primarily concerned with what students' culminating capabilities at graduation time. It centers curriculum and assessment design around higher order exit outcomes.
6. It is accountable to the stakeholders, the learners, the teachers, the employers and the public.
7. It leads to the change of schooling, including the curriculum, instruction and assessment.

OUTCOME BASE EDUCATION (OBE)

Definition

Outcome-Based Education (OBE) is a student-centric teaching and learning methodology in which the course delivery, assessment are planned to achieve stated objectives and outcomes. It focuses on measuring student performance i.e. outcomes at different levels.

Some important aspects of the Outcome Based Education

1. **Course** is defined as a theory, practical or theory cum practical subject studied in a semester. For Eg. Engineering Mathematics
2. **Course Outcome (CO)** Course outcomes are statements that describe significant and essential learning that learners have achieved, and can reliably demonstrate at the end of a course. Generally three or more course outcomes may be specified for each course based on its weightage.
3. **Program** is defined as the specialization or discipline of a Degree. It is the interconnected arrangement of courses, co-curricular and extracurricular activities to accomplish predetermined objectives leading to the awarding of a degree. For Example: B.E., Marine Engineering
4. **Program Outcomes (POs)** Program outcomes are narrower statements that describe what students are expected to be able to do by the time of graduation. POs are expected to be aligned closely with Graduate Attributes.
5. **Program Educational Objectives (PEOs)** The Program Educational Objectives of a program are the statements that describe the expected achievements of graduates in their career, and also in particular, what the graduates are expected to perform and achieve during the first few years after graduation.
6. **Program Specific Outcomes (PSO)** Program Specific Outcomes are what the students should be able to do at the time of graduation with reference to a specific discipline. Usually there are two to four PSOs for a program.
7. **Graduate Attributes (GA):** The graduate attributes, 12 in numbers are exemplars of the attributes expected of a graduate from an accredited program.

Knowledge levels for assessment of Outcomes based on Blooms Taxonomy

Level	Parameter	Description
K1	**Knowledge**	It is the ability to remember the previously learned material/information
K2	**Comprehension**	It is the ability to grasp the meaning of material.
K3	**Application**	It is the ability to use learned material in new and concrete situations
K4	**Analysis**	It is the ability to break down material/concept into its component parts/subsections so that its organizational structure may be understood
K5	**Synthesis**	It is the ability to put parts/subsections together to form a new whole material/idea/concept/information
K6	**Evaluation**	It is the ability to judge the value of material/concept/statement/creative material /research report) for a given purpose

The 12 Graduate Attributes in Outcome Based Education

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** The problems:
   - that cannot be solved by straightforward application of knowledge, theories and techniques applicable to the engineering discipline.
   - that may not have a unique solution. For example, a design problem can be solved in many ways and lead to multiple possible solutions.
   - that require consideration of appropriate constraints/requirements not explicitly given in the problem statement. (like: cost, power requirement, durability, product life, etc.)
   - which need to be defined (modeled) within appropriate mathematical framework.
   - that often require use of modern computational concepts and tools.

5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities, with an understanding of the limitations
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with t h e society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

4 things you need to know about Outcome-Based Education in India

Outcome-Based Education" (OBE) model is being adopted at a fast pace at Engineering colleges in India at the moment. It is considered as a giant leap forward to improve technical education in India and help Indian Engineers compete with their global counterparts. Now, how is OBE going to change engineering education in India? Here are four things which you need to know about **Outcome-based education** (OBE) and why it is important for engineering education in India.

1) What is OBE?

Outcome based education (OBE) is student-centered instruction model that focuses on measuring student performance through outcomes. Outcomes include knowledge, skills and attitudes. Its focus remains on evaluation of outcomes of the program by stating the knowledge, skill and behavior a graduate is expected to attain upon completion of a program and after 4 – 5 years of graduation. In the OBE model, the required knowledge and skill sets for a particular engineering degree is predetermined and the students are evaluated for all the required parameters (Outcomes) during the course of the program.

2) Why institutions need to follow OBE?

The induction of India in the Washington Accord in 2014 with the permanent signatory status of The National Board of Accreditation (NBA) is considered a big leap forward for the higher-education system in India. It means that an Engineering graduate from India can be employed in any one of the other countries who have signed the accord (**Know more about the Washington accord here**). For Indian Engineering Institutions to get accredited by NBA according to the pacts of the accord, it is compulsory that engineering institutions follow the Outcome Based Education (OBE) model. So, for an Engineering Institution to be accredited by NBA it should compulsorily follow the OBE model.

3) How is it measured?

The OBE model measures the progress of the graduate in three parameters, which are

- Program Educational Objectives (PEO)
- Program Outcomes (PO)
- Course Outcomes (CO)

Program Educational Objectives (PEO) are broad statements that describe the career and professional accomplishments that the program is preparing the graduates to achieve. PEO's are measured 4-5 years after graduation.

Program outcomes are narrower statements that describe what students are expected to know and be able to do by the time of graduation. They must reflect the 12 Graduate attributes as described by NBA for under graduate engineering programs. Course outcomes are the measurable parameters which evaluates each students performance for each course that the student undertakes in every semester.

4) Methods of assessment

The method of assessment of the candidates during the program is left for the institution to decide. The various assessment tools for measuring Course Outcomes include Mid -Semester and End Semester Examinations, Tutorials, Assignments, Project work, Labs, Presentations, Employer/Alumni Feedback etc,. These course outcomes are mapped to Graduate attributes and Program outcomes based on relevance. This evaluation pattern helps Institutions to measure the Program Outcome. The Program Educational Objective is measure through Employer satisfaction survey (Yearly), Alumni survey (Yearly), Placement records and higher education records.

The adoption of OBE at engineering institutions is considered to be a great step forward for higher education in India but the actual success lies in the effective adoption and stringent accreditation process to ensure the quality of education is maintained.

15 Things to Know About Outcome Based Learning in a Modern Cloud World

With the growing trend of technological cloud and agile based delivery, it has become imperative to align learning, with attributes such as just in time, skill based and adaptive, to meet the desired business need. So outcome based learning becomes key to meeting the growing and changing business requirement of having access to the right knowledge, at the right time. The success of Google maps reflects the same where users navigate to locations, just-in-time, Intuitive, target based and on demand and is very outcome driven. The learning paradigm is also shifting towards flexible, results oriented curriculum.

As per Tucker, 2004

"Outcome based education (OBE) is a process that involves the restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of high order learning and mastery rather than the accumulation of course credits"

As per Wikipedia

"Outcome-based education (OBE) is an educational theory that bases each part of an educational system around goals(outcomes). By the end of educational experience, each student should have achieved the goal. There is no single specified style of teaching or assessment in OBE; instead, classes, opportunities and assessments should all help students achieve the specified outcomes. The role of faculty adapts into instructor, trainer, facilitator and/or mentor based on the outcomes targeted"

Below are the 15 top things to know about Outcome Based Learning:

1. What is outcome based learning?

Outcome based learning defines objectives or outcomes while designing learning plans for users, avoiding a general knowledge building approach. Let us take an example. If a user needs to migrate an existing Web logic Application environment to Java Cloud Service , the team training should focus on the same outcome, have clear objectives, and build skills around the steps or knowledge required to achieve the desired result(s).

2. What are the attributes of outcome based learning ?

- Result oriented,
- Objective based for the project,
- Resource skill level focused,
- Build specific implementation goals,
- Quantitative and measurable
- Mixed mode learning – formal, social , On-the-Job.

3. When is outcome based learning required?

It is always best practice to deliver bespoke outcome based learning with methodologies incorporating multiple approaches specific to, for example, graduate hires, experienced consultants , technical audience etc., The best approach is to have a flavor of outcome based learning in-built into all projects. For specific project needs, such as training senior architects or developers, the best approach is to incorporate outcome based learning. For graduate hires providing a general know-how of the product and build-out of foundations might be the right approach, mixing the right outcomes and the roles.

4. What is the current process of learning?

The current process of learning is often a mixed mode and outcome are measured on the knowledge level of participant not on the amount of tasks or outcomes which can be generated by the individual. In modern learning, it is imperative to automate the learning process with a skill based framework preferably by digital technologies and augment the same with on the job learning as well as enabling knowledge and social learning.

5. What are the methodologies for implementing outcome based learning ?

There are no standard methodologies, but the best practice is to build knowledge assets based on skill development need and augment with workshops to enhance knowledge. For example, building a short video platform which would help users learn a task to solve a challenge followed by detailed practice and workshop would be an approach. Also the methodology would focus on business outcomes, collaborative models of learning and informal education.

6. How is outcome based learning relevant to Cloud technologies?

Most of the solution implementations on cloud are modular based and expect rapid roll out , so outcome based, short learning sessions becomes a key approach to meeting the shorter and quick model of competency, suitable for implementation, with DevOps –Agile based model driving a modular approach, outcome based learning is therefore more suitable for cloud learning. Also implementing functionality such as collaborative learning, learning from customer implementation best practice.

7. What are example of outcome based learning?

Below are some of the outcome based learning plans , delivered with short workshops and the digital platform, helping to implement the project in hand. This drives the overall ROI of the program.

- Configuring Transparent Data Encryption with Java Cloud Service,
- Performance tuning of Java Cloud Service to meet the customer project,
- Developing IOT application for IOS on user interface components and specs defined by customer.

8. How to get started and formalize the approach with a learning organization ?

The Learning & Development (L&D) leaders should ensure a portion of all training programs include an outcome based approach, broadly all programs will certainly need quantitative approach. The outcome based programs are designed from the bottom up, looking at the challenges, roles and projects, and embedding into the learning plans.

9. What User/ roles should use outcome based learning ?

All roles would be suitable for outcome based learning as the approach is to derive skills and curriculum which are closer to reality and therefore project goals. It can be implemented for any functional, technical and end user programs.

10. What are the business benefit of outcome based learning ?

The key business benefits of outcome based learning include:

- Return on Investment, which with training is high, as the focus is on solving specific target areas and increasing the value from every dollar invested.

- Improved project efficiency which can increase the productivity of the project and hence the pay back revenue,

- Greater focus on the challenges, which can improve the effectiveness of the resources and hence can reduce cost investment in areas such as support.

11. What are the types of outcome based learning?

They can be broadly categorized based on the below

Product Based

In a product based technique the focus is to unleash and improve on learning the feature / functionality of the product which would help in specific project objectives.

Project Based

In Project based approach the focus is to work with Consulting / Implementers to design competency for the outcomes to be driven for implementation such as a migration task, optimization , security etc.,

Role Based

In a Role based learning , we are designing a curriculum for Developers, Architects etc., on what is required to enhance their effectiveness on some of the core product and project functionality

12. What is the service available from Oracle University ?

Oracle University has been pioneers in driving "User Adoption Service" which are specific customized offerings, used to train end users and also functional and technical users. With the modern cloud era , the solution will use digital skill based subscriptions and also the guided learning solution to implement the solution. For more details refer to the URL at the end of this blog.

The Cloud Learning Subscription (CLS 3.0), a new intuitive platform for learning, from Oracle University is also designed to deliver on the paradigm of skill based learning and driving outcomes for specific roles, with features including:

- Role and skill-based learning,

- Content and skill points (designed to motivate user activity),

- Integrated TOD features (Video content, Labs, eKits),

- Skill check assessments,
- Direct access to certification exams (subscribers receive access to free exam attempt),
- Interface Features (My Progress),
- Customer best practices and social platform.

13. How does outcome base learning relate to modern principles like Agile?

Most of modern development is based upon agile methodologies, where the design is more flexible and development are increasingly using the concepts of most viable project. Outcome based learning can focus on program development based on the stage and drive improvement. Also the short sprint based programs would help users to align objectives what they are working

14. How is consulting / implementation team implement Outcome based learning?

Any consulting / implementation projects would have defined implementation life cycle and objectives. The switch here, is to move from product to project based training and to be more solution driven, For example, a project might use components of Database Cloud Service, SOA Cloud Service, Fusion HCM and SAP for the customer. The outcome based learning implementing programs covers customized task oriented programs designed for specific sets of users/roles, mapping to end implementation objectives

15. Is there an execution framework for implementing Outcome based learning?

The execution framework for outcome based learning follows a design and architecture principle. The learning methodology requires a great deal of work to understand core challenges and the end result(s) for competency development.

Acadamic quality assurance :

If you are teaching or will be teaching in educational school, college or a university; then this course is for you**.** The course is the only course available on this topic in Udemy, where more around 1000 highly satisfied teachers and academician are presently enrolled from around 100 countries. The course is practical and involves experiential learning on achieving world class Quality in Education with modern concepts and methodologies.

The course is also useful for those looking for ways to implement OBE to fulfill the requirements of Accreditation bodies. The course covers fundamentals to advance modern concepts with plenty of practical examples and good practices with implementation guidelines. The course aims to make you a much better teacher, researcher and/or administrator.

Outcome Based Education is a changing trend modern and 21st century schools, colleges and universities in many countries and institutions. Presently, most teachers are teaching in traditional classroom setups which are highly "teacher-centered" or taught with fixed curricula. OBE is a shift towards "Students-Centered" classrooms with focus on learning outcomes. Many new knowledge and skills are required in traditional teachers for teaching based on the required learning outcomes. Teachers and administrators of education institutions will have to learn new methods and approaches to prepare themselves for world-class quality.

Academic Quality Assurance for teachers and institutions is all about setting academic standards/benchmarks for all the subjects and programs taught in schools, colleges or universities; a structure for monitoring, controlling and continuously improving the learning outcomes and ensuring that each academic standard is complying to internal and external benchmarks. A set of QA initiatives/interventions are therefore required at various levels. This course provides details of **QA initiatives in the areas of Teacher and Teaching, Curriculum, Assessment, Research, Teacher-Student Communication, Students Affairs and Services and Online Education (eLearning)**. The use of eLearning is specifically expanding throughout the world, particularly in blended or flipped learning, in order to strengthen their educational efficiency and effectiveness. The course also provides introduction to latest eLearning trends and how QA is assured in this mode of learning.

The course also provides introduction to many internationally popular QA/Accreditation frameworks, programs and models at schools, colleges and universities levels, covering their most crucial points. The instructor shares global experiences and challenges faced by teachers as individuals, institutions and state levels; making it a valuable learning experience for teachers, administrators, policy makers and educational professionals for across the world.

The instructor is the Head of PIQC Institute of Quality, a center for excellence in Quality.

References

Implementing Outcome-Based Education (OBE) Framework: Implications for Assessment of Students' Performance

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Implementing Outcome-Based Education (OBE) Framework: Implications for Assessment of Students' Performance

Jonathan V. Macayan
Mapúa University

Abstract

This paper initially traces the roots of Outcome-Based Education (OBE) and introduces key concepts at the level of school-wide implementation based on Spady (1994). It then proceeds with defining what outcomes are and discusses how the definition of outcomes demands paradigm shift in assessment and evaluation practices. Finally, the paper tackles important implications of carrying out the framework for the practice and methods of assessment and evaluation of students' performance in schools. These implications are meshed with discussion of the four operating principles of OBE.

Keywords: outcome-based assessment, outcome-based evaluation, outcome-based education

Introduction

In response to the need for standardization of education systems and processes, many higher education institutions in the Philippines shifted attention and efforts toward implementing Outcome-Based Education (henceforth OBE) system on school level. The shift to OBE has been propelled predominantly because it is used as a framework by international and local academic accreditation bodies in school- and program-level surveillance, on which many schools invest their efforts into. The Commission on Higher Education (CHED) even emphasized the need for the implementation of OBE by issuing a memorandum order (CMO No. 46, s. 2012) entitled, "Policy-Standard to enhance quality assurance in Philippine Higher Education through an Outcomes-Based and Typology Based QA". Then, in 2014, it was followed

by a release of the Handbook of Typology, Outcomes-Based Education, and Sustainability Assessment.

Given the current status of OBE in the country, this paper intends to shed light on some critical aspects of the framework with the hope of elucidating important concepts that will ensure proper implementation of OBE. Also, the paper zeroes in on inferring implications of OBE implementation for assessment and evaluation of students' performance.

What is OBE?

Outcomes-based education as defined by Spady (1994, p. 12) means "clearly focusing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experience."

The definition explicitly specifies certain markers, which should serve as bases of actions and procedures that schools must undertake to ensure the proper institution-wide implementation of OBE. Tucker (2004) further emphasized this in his description of OBE as a process that should involve the restructuring of curriculum, assessment, and reporting practices in education. The changes that OBE entails put emphasis on students' demonstration of learning outcomes rather than accumulation of course credits. Also, these definitions of OBE emphasize the need to accordingly align all aspects of educational processes and systems to the expected outcomes that all students should be able to proficiently exhibit at the end of the curriculum, and that outcomes should not be viewed synonymously with grades or simply curricular completion, but rather authentic demonstrations of expected competencies as a result of significant learning experiences.

It can be surmised then that the implementation of OBE requires consistency across desired outcomes of education, teaching and learning activities, and assessment methods and practices.

To organize everything in the educational system (curriculum, resources, facilities, curricular and co-curricular activities, etc.) and align them with the desired outcomes of education, it would be necessary first for schools to have a clear understanding of what outcomes are. Thus, the next section addresses the following questions: What are outcomes and how are they derived and stated? The next section of this article will provide thorough discussions on the *outcomes* according to the OBE framework.

What are Outcomes?

The term *outcome* is lexically defined as *"something that follows as a result or a consequence", "an end-product or a result",* and *"the way a thing turns out"*. One common denominator among these definitions is that they all concur that outcomes happen as a product or an end-result of processes or any antecedent factors or events. In education, outcomes are viewed as the learning results that students are expected to demonstrate across the curriculum. Hence, outcomes in education may vary in terms of levels or forms. According to Killen (2000), some outcomes are expected to be demonstrated at a course level (subject-related academic outcomes), and some are at the program and institutional levels (cross-discipline outcomes). However, according to Spady (1994, p. 49), the most important form of outcomes with which other forms or levels of outcomes should be aligned are those that reflect real life roles that learners will perform the moment they exit the education system – these are called' culminating outcomes.'

Simply, the course/subject-related and program level outcomes should be fundamentally linked to the culminating or exit outcomes of education. This practice ensures that education prepares students to perform future life-roles. Thus, the focus of OBE is more on the results or products of education, rather than on the content and curricular processes (Morcke et al., 2012).

In an OBE set-up, the first thing that should be identified and explicitly stated is the culminating or exit outcomes, *what we want our students to be able to do successfully at the end of their learning journey in school*. Again, these culminating outcomes should be based on life-roles that students will perform in the real world. One of the operating principles of OBE in Spady's (1991; 1994) framework is the *Design Down* principle, which should be simultaneously applied together with the other operating principles (i. e., clarity of focus, high expectation, and expanded opportunity). The design down principle is like a top-down approach of formulating and stating outcomes. The culminating outcomes should be stated first, followed by some enabling outcomes (program level), then by some discrete outcomes that are measured in terms of specific learning tasks (course level). The backward design of outcomes would somehow guarantee that all the forms and levels of outcomes across the curriculum are systematically and intentionally aligned and connected. Then, the implementation of this design should be forward.

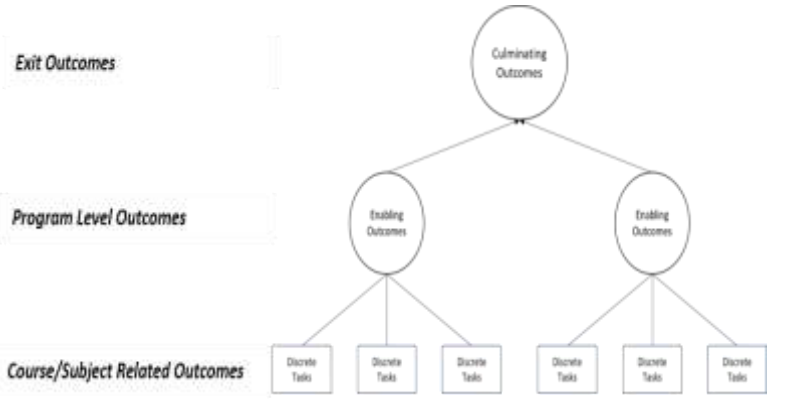

Figure 1. Levels of Outcomes of Education

Implications to Learning Assessment Practices

As discussed in the preceding section, the implementation of OBE in the institution level would entail restructuring of relevant systems and procedures to constructively facilitate the attainment of the desired outcomes of education. This includes the critical restructuring of assessment methods and procedures employed by educators and institutions in evaluating student performance, which serves as evidence of the attainment of outcomes.

Assessment plays an important role in the educative process. It serves as basis for determining the rate of learning progress of students as well as the source of information of opportunities for further improvement. One of the most comprehensive definitions of assessment is provided by the American Association for Higher Education (Angelo, 1995, p. 7):

> An ongoing process aimed at understanding and improving student learning. It involves making our expectations explicit and public; setting appropriate criteria and high standards for learning quality; systematically gathering, analyzing, and interpreting evidence to determine how well performance matches those expectations and standards; and using the resulting information to document, explain, and improve performance.

In OBE schools, assessment, when implemented appropriately, would have manifold purposes and benefits. Aside from providing educators ideas about the progress of students, it also informs them about the effectiveness of their teaching methodologies and approaches. Moreover, assessment results in an OBE school are used as bases to improve educational services and systems on an institutional level (Bresciani et al., 2012).

Proper implementation of OBE both in the classroom and institutional levels would demand paradigm shift. The following summarizes the shifts of assessment practices moving from the traditional practices to OBE practices:

Paradigm Shift 1: Teacher-Centered to Learner-Centered Approach

Assessment in outcome-based education require a shift in mindset of educators and educational leaders. The shift requires a turnaround of approach from teacher-centered to learner-centered education (Bresciani, 2012; Bresciani et al., 2009; Ramoroka, 2006; Nieburh, 1996).

Table 1
Assessment: Traditional vs. OBE

Traditional	OBE
• What are our (educators) practices	• What our students have become and able to demonstrate
• Teaching (inputs, content)	• Learning (demonstration of skills and competencies, outcomes)
• Teaching and Learning (TLA) as the end	• Teaching and Learning (TLA) as the means to an end
• Practice determines the outcomes	• Outcomes inform the practice

Paradigm Shift 2: Being Outcomes-Minded

Needless to say, in outcome-based education framework everything should be based on outcomes. Thus, assessment methods and techniques should be consistent with the stated outcomes of education. According to Bresciani (2006), outcome-based assessment is a systematic and intentional process. This means that the assessments used in this set-up are deliberately designed and administered in pursuit of outcomes attainment. Along with teaching and learning activities, assessments used in OBE classrooms should be constructively aligned with the outcomes that are expected to be

successfully demonstrated at specific stages and curricular levels (Biggs, 2011; Biggs & Tang, 2007).

Spady (1994) specified four operating principles that will guide educators and academic leaders in the implementation of OBE. When applied consistently, systematically, creatively, and simultaneously the efforts of shifting to OBE can be almost guaranteed.

The four operating principles of OBE and their implications for assessment are as follows:

Clarity of focus. Educators should be made aware and conscious about the outcomes of education each student must manifest or demonstrate at the course level and that these outcomes at the classroom level are connected to the attainment of higher level outcomes (i. e., program/institutional outcomes and culminating outcomes). Thus, at the initial stage of academic or course planning, the higher outcomes serve as guide for educators in defining and clearly stating the focus of the course/subject. This principle implies that the criteria of attainment of learning outcomes (students' learning performance) that can be elicited through assessments should exhibit a particular standard that applies to all learners. In effect, this standardizes the assessment practices and procedures used by educators in specific subject/course.

High expectations. As stated in the clarity of focus principle, learning outcomes at the course level are necessarily connected to higher level outcomes. These connections warrant educators from eliciting high level of performance from students. This level of performance ensures that students successfully meet desired learning outcomes set for a course, and consequently enable them to demonstrate outcomes at higher levels (program or institutional level). Thus, the kind of assessments in OBE learning context should challenge students enough to activate and enable higher order thinking skills (e. g., critical thinking, decision making, problem solving, etc.), and should be more authentic (e. g., performance tests, demonstration exercise, simulation or role play, portfolio, etc.).

Expanded opportunity. The first and second principles importantly necessitate that educators deliver students' learning experiences at an advanced level. In the process, many students may find it difficult complying with the standards set for a course. As a philosophical underpinning of OBE, Spady (1994, p. 9) emphasized that "all students can learn and succeed, but not on the

same day, in the same way." This discourages educators from generalizing manifestations of learned behavior from students, considering that every student is a unique learner. Thus, an expanded opportunity should be granted to students in the process of learning and more importantly in assessing their performance. The expansion of opportunity can be considered multidimensional (i. e., *time, methods and modalities, operational principles, performance standards, curriculum access and structuring*). In the assessment practice and procedures, the *time* dimension implies that educators should give more opportunities for students to demonstrate learning outcomes at the desired level. Thus, provisions of remedial, make-up, removal, practice tests, and other expanded learning opportunities are common in OBE classrooms. Methods and modalities of assessment can also be expanded depending on the types of learners. Students vary in many ways. One important aspect of diversity among learners for example is their thinking style. In studies on thinking styles (e. g., Abdi, 2012; Zhang, 2002), findings revealed that students vary on thinking or cognitive styles. These manifold styles when accommodated appropriately not only on the delivery of lessons but also on the type of assessments would yield more productive and successful results from students in terms of demonstrating the learned outcomes.

Design down. This is the most crucial operating principle of OBE. As mentioned in the previous section, OBE implements a top-down approach in designing and stating the outcomes of education (i. e., culminating --- enabling --- discrete outcomes). The same principle can be applied in designing and implementing outcomes' assessments in classes.

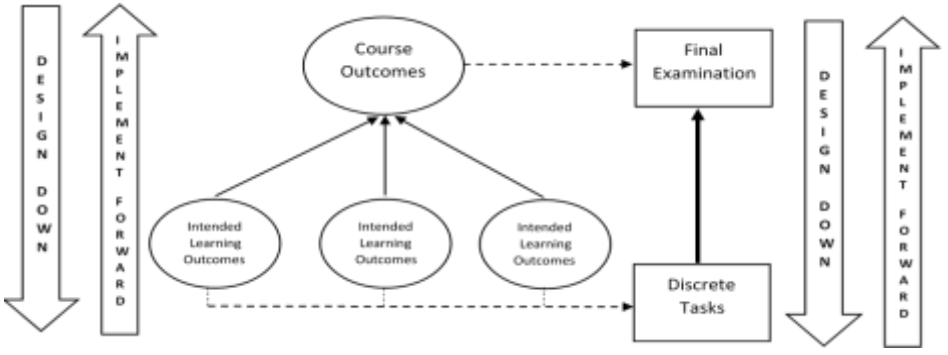

Figure 2. Backward Design-Forward Implementation: Course Level Outcomes and Assessments

Traditionally, the design of assessments for classes is done following a bottom-up approach. Educators would initially develop measures for micro learning tasks (e. g., quizzes, exercises, assignments, etc.), then proceed to develop the end-of-term tasks (e. g., major examination, final project, etc.). In OBE context, since the more important outcomes that should be primarily identified and defined are the culminating ones, it follows that the same principle should logically apply. Thus, the first assessment that should be developed and designed for a course is the final assessment; from this, smaller measures (discrete tasks) can be logically designed and progressively implemented. This process employs the top-down approach, which guarantees that all course assessments are constructively linked and aligned to the desired outcomes of the course/subject, and ultimately to the culminating outcomes of education (i. e., program/ institutional, and exit).

Discussion

Having discussed the fundamental concepts and principles of OBE, as well as the implications of this framework for schools systems and processes, the following can be deduced:

(1) The implementation of OBE in schools requires an academic organization to realign and adjust educational processes and systems in accordance with the desired outcomes of education. In effect, this necessitates major stakeholders of education (e. g., academic leaders, educators, academic external partners, etc.) to work together in determining, defining, and stating outcomes at various curricular levels (i. e., culminating, program, course outcomes).

(2) Proper implementation of OBE requires schools to undergo paradigm shift and consequently adopt some redefinition of the kind of education and educational services that they deliver to students. One of the shifts or changes that schools must adopt is learner-centeredness, not only in principle but importantly in practice. This change in approach cascades necessarily to assessment and evaluation practices. Another critical shift is not only on the awareness but on a serious adherence with the operating principles of OBE. To ensure proper implementation of the framework, these principles should be applied consistently, systematically, creatively, and simultaneously.

(3) Assessment plays a very important role in an OBE set-up. When implemented appropriately, assessment results serve as reliable bases in

determining whether students are on the right track in attaining the outcomes (formative) or have actually attained the desired outcomes at the course or program level (summative).

(4) Outcome-based assessment provides feedback and informs educators as regards the effectiveness of the teaching and learning practices that they employ in classes. This constructively and significantly redounds to the development of more responsive and adaptive teaching techniques that support students in attaining the desired outcomes of education.

Finally, it is clear that the optimal benefits of OBE can be realized if schools will seriously anchor the implementation of the framework on the philosophical underpinnings of outcome-based education. That is, everything in the educational processes and systems should be based on the outcomes; outcomes which extend beyond academics and reflect real-life attributes that the various stakeholders deem pivotal among students who graduate from schools and then integrate to the society as professionals. Teachers and academics must espouse the true-to-form purpose of OBE, which transcends accreditation and goes beyond preparing students for high-stakes assessments. This, in turn, challenges educators and assessment experts to develop and implement authentic assessments that measure real outcomes of education, be they quantitative or qualitative measures. Eventually, outcomes-based assessment should encourage the reshaping of the various levels of outcomes and the rethinking of teaching and learning and assessment tasks to ultimately prepare students not only for academic success, but also importantly for life success.

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Outcomes-Based Education (OBE):

A Transformational Perspective on Quality and Mobility in Higher Education

By: Bahar Mousavi Hejazi

For: Professor Katharine Janzen

Community College Leadership Program

OISE/U of T

January 2011

Outcomes-Based Education (OBE):

A Transformational Perspective on Quality and Mobility in Higher Education

The objective of this paper is to identify the outcomes-based education as a transformational approach which could positively impact the issues of learning quality and mobility within Ontario's higher education. Based on the review of the most recent literature, five scholarly papers have been identified, studied and critically analyzed. The philosophical worldview of the researchers, their subsequent research methodologies and rationale as well their thesis, anti-thesis and findings are being discussed through this study.

The first section entitled 'The Importance of Outcomes-Based Learning in the Future of Ontario's Higher Education' analyzes the paper written by Mary Catharine Lennon (2010), a Policy Analyst at Higher Education Quality Council of Ontario (HEQCO) and a PhD Candidate in Theory and Policy Studies in Higher Education at OISE/UT. In her paper, 'Signalling Abilities and Achievement: Measuring and Reporting on Skill and Competency Development', she examines policies and strategies for developing common definitions regarding the implementation of OBE by using a social constructivist approach. The thesis of Lennon's research creates the ground for the study of the new role of faculty and students in the OBE paradigm. 'The New Faculty Roles in an Outcomes-Based Education System' is the title of the second discussion. In this section, the paper written by Elizabeth A. McDaniel, Dean of Faculty and Academic Programs at the Information Resources Management College of National Defence University (US) which explores the experience of her team within 4 different outcomes-based education models using a phenomenological approach is being critically approached and discussed.

The last discussion enhances the relationship between "Outcomes-Based Education and Student Success in Community Colleges' by the analysis of the paper entitled 'Learning Outcomes for the Twenty-first Century: Cultivating Student Success for College and the Knowledge Economy', written by Cindy L. Miles and Cynthia Wilson, and published in 2004 which reports the experience of sixteen community colleges within OBE. In the end, a philosophical worldview will be proposed for further inquiry of the issue within Ontario's higher education.

The Importance of Outcomes-Based Learning in the Future of Ontario's Higher Education

In her article 'Signalling Abilities and Achievement: Measuring and Reporting on Skill and Competency Development' which is "the third report in a series examining international trends in developing higher education systems that support the knowledge based economy (KBE) for the purposes of enhancing Ontario's higher education policy initiatives", Mary Catharine Lennon, a Policy Analyst at Higher Education Quality Council of Ontario (HEQCO) and a PhD Candidate in Theory and Policy Studies in Higher Education at OISE/UT "reviews initiatives designed to measure and report on individuals' acquisition of skills and competencies. It examines policies and strategies for developing common definitions when stating expectations about learning outcomes, transparency in communication of goals and accomplishments both prior to and following education and training, and the mobility of students within education systems and institutions, nationally and internationally. Tools and strategies for assessing student performance in achieving stated learning outcomes are examined as to their intent and implementation. Also addressed are the qualifications frameworks that other countries have developed to define outcomes and expectations at each qualification level". (Lennon, 2010, p. 3)

The philosophical worldview proposed in this study is the social constructivist approach. In this paradigm, "the researcher's intent is to make sense of (or interpret) the meanings others have about the world. Rather than starting with a theory (as in postpositivism), inquirers generate or inductively develop a theory or pattern of meaning" (Creswell, 2009, p. 8). In this approach, the focus is on the specific contexts in which people live and work, in order to come up with a better understanding of the historical and cultural settings of the participants. "The basic generation of meaning is always social, arising in and out of interaction with a human community. The process of qualitative research is largely inductive, with the inquirer generating meaning from the data collected in the field". (Creswell, p. 9)

According to Creswell, 'understanding', 'multiple participant meanings', 'social and historical construction', and 'theory generation' constitute the 4 major elements of the constructivist approach. Lennon creates an understanding of the topic by defining learning outcomes and key competencies as well as the related assessment tools such as the traditional qualifications frameworks. In this regard, she

adapts the definition of the European Commission which is also mentioned as a working definition of the term in the European University Association (EUA) Bologna Handbook (2006).

> Learning outcomes, defined by the European Commission in terms of the knowledge, skills, and competencies to be acquired, are considered 'statements of what a learner knows, understands and is able to do on completion of a learning process'. (Lennon, p. 4)

This adaptation of learning outcomes' definition is an important component of Lennon's worldview as it lays the ground for her construction of the social and historical context as well as her theory generation which is being occurred based on a qualitative case study of the 'European Higher Education Model'.

> In this review, the European Union (EU), and selected EU member states provide case studies of activities in assessing and reporting on graduates' achievements in acquiring skills and competencies because several have been particularly active in this respect. Through what became known as the Bologna Process, the EU has aimed to develop the European Higher Education Area (EHEA) by 2010; progress toward this goal has included initiatives supporting broad agreements on learning outcomes, increasing standardisation of curriculum for the purposes of comparability, and devising common methods for reporting on skills, and competencies acquired through studies. The European model is being employed in other regions of the world, and is an important development in qualification assessment and reporting for the labour market. (p. 3)

A survey of the literature on learning outcomes comes up with a number of similar definitions of the term which do not differ significantly from each other. "From these definitions, it is clear that:

- Learning outcomes focus on what the learner has achieved rather that the intentions of the teacher;
- Learning outcomes focus on what the learner can demonstrate at the end of a learning activity" (Kennedy, Hyland, &Ryan, 2006, p. 5).

Similarly, the term ‘competence’ has been be defined as a key component of an outcomes-based education (OBE) model. “The relationship between learning outcomes and competences is a complex area – the subject of some debate and considerable confusion. ‘Competence’ and ‘competences’ are used in association with learning outcomes in different countries in a number of ways – hence the problem. ‘Competence’ can broadly refer to aptitude, proficiency, capability, skills and understanding, etc. A competent person is someone with sufficient skills, knowledge and capabilities. Some take a narrow view and equate competence just with skills acquired by training. It should be recognised that there is no precise common understanding or use of the term”. (Adam, 2006, p. 7)

However, Lennon emphasizes on the significant role of key competencies in the definition of an outcomes-based education model and the importance of selecting a specific categorization of this key factor. In this regard, she adapts the classification of key competencies compiled by the Organisation for Economic Co-operation and Development (OECD) for general education and lifelong learning and approved by the European Centre for the Development of Vocational Training (CEDEFOP) in order to be considered for application to vocational education and teacher training.

> Defining key competencies can help focus the learning outcomes, and may serve as the drivers for specific learning outcomes. The OECD has compiled a classification of key competencies. Developed in the late 1990s and linked to the Programme for International Student Assessment (PISA), the Definition and Selection of Competencies (DeSeCo) project groups competencies into three categories:
>
> 1. Using tools interactively (use language, symbols and texts interactively, use knowledge and information interactively, use technology interactively);
> 2. Interacting in heterogeneous groups (relate well to others, co-operate, work in teams, manage and resolve conflicts);
> 3. Acting autonomously (act within the big picture, form and conduct life plans and personal projects, defend and assert rights, interests, limits and needs). (Lennon, p. 5)

Lennon also affirms that "at higher education levels, particularly in colleges, more specific competencies are set out. Ontario, for example, has developed a summary of 'essential employability skills' which sets out 6 categories of skills: Communication, Numeracy, Critical Thinking & Problem Solving, Information Management, Interpersonal, and Personal. The framework indicates the learning outcomes associated with each skill and sub-skill". (p.5)

Although Lennon admits that "Learning outcomes assessments may provide valuable information; however, there is concern that the results can be used as ranking tools to assess, grade, and compare institutions if they are not carefully implemented. Yet, establishing clear expectations of learning outcomes for the purposes of transparency, mobility, and accountability are is important to ensure quality, transparency, and compatibility among the credentials. Furthermore, with the common practice of developing qualifications frameworks, it is necessary to have a solid understanding of the skills, competencies, and knowledge gained within each qualification bracket." (p. 7)

In the continuation of her constructivist approach to create a structural understanding of the outcomes-based education model, Lennon recognizes the qualifications frameworks as important tools which measure student performance against expected learning outcomes. "Although similar to the statements of expected learning outcomes, the purpose of qualifications frameworks is to demystify the knowledge, skills, and competencies to be acquired through the chosen educational program. The general aims are to support an understanding for students, institutions and employers about how to navigate the system. If assessment of the compatibility of programs, degrees and diplomas for the student and the labour market is completed, then both national and international mobility become more feasible" (p.7).

In this order, Lennon refers again to the description of the term by OECD and the European Union. "Qualifications frameworks are important tools to signal to the labour market the skills and competencies held by graduates, the principal goal of a national framework is to achieve a better match between educational provision and the needs of the labour market and aim to integrate and coordinate national qualifications subsystems and improve the transparency, access, progression and quality of qualifications in relation to the labour market and civil society" (p.7).

The strategy of inquiry or research methodology undertaken by Lennon is a qualitative case study of the European Higher Education area which is aligned with her constructivist worldview. "The most aggressive work done on developing a common framework for higher education skills and competencies has occurred in Europe. Aspects of the Bologna Accord and the Copenhagen Accord have been introduced into other regions in the world, specifically the Tuning Project". (p. 9)

Lennon believes that "Ontario should be aware of these developments as a good example of how learning competencies and assessments are being introduced into higher education systems" (p. 9). However, she recognizes that:

> The Government of Ontario has also developed a comprehensive qualifications framework to provide students, parents, employers, and others involved in the postsecondary education system with information on the various options and avenues of study. The Ontario Qualifications Framework (OQF) identifies the main purposes of each qualification, outlines the learning expectations for graduates who hold each type of qualification, and shows the relationship between the different qualifications. It is a well-developed tool that addresses both inputs and outputs of broad program areas that may allow for general international comparisons (p. 8).

Creswell defines the qualitative research as "a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures, data typically collected in the participant's setting, data analysis inductively building from particulars to general themes, and the researcher making interpretations of the meaning of the data. Those how engage in this form of inquiry support a way of looking at research that honors an inductive style, a focus on individual meaning, and the importance of rendering the complexity of a situation" (Creswell, p. 4).

> A massive undertaking related to the development of standardized learning outcomes and competencies has been underway in Europe for nearly ten years. The Bologna Declaration of 1999 saw 20 ministers of education in member states of the European

> Union agree to form the European Higher Education Area (EHEA) by 2010. The goal of what became known as the Bologna Process has been to bring all higher education institutions into alignment with the Anglo-Saxon model of two-tiered PSE studies. Another goal of the process is to facilitate student mobility by developing a clear understanding of the value of each credential. Student mobility is eased by the European Credit Transfer System (ECTS), which assigns credit values to curriculum in the more traditional inputs method". (Lennon, p. 9)

In this respect, Lennon studies the case of the Bologna Process and its subsequent aspects and strategies including the Tuning Project, the Dublin Descriptors, the Diploma Supplement, the Lisbon Strategy for an integrated Labour Market and the Copenhagen Process for Vocational Education and Training.

> The Bologna Accord examines how universities are addressing issues of modernizing the university system and focuses on learning outcomes through the Tuning Project, which sets outcomes for programs and educational systems. At the college level, the Copenhagen Accord similarly sets to assign outcomes, skills, and competencies to programs across Europe. Thus, learning outcomes work as a quality assurance mechanism within institutions, educational systems, and the broader academic community, and as a means of establishing expected norms from programs and short-cycle diplomas. Ontario might want to consider the strategies of Europe when conceptualizing how to move forward in developing a comprehensive program for assessing the skills and competencies students acquire through training and standardizing methods of reporting and acknowledging in specific credentials. (p. 12)

The paper concludes that "it has become increasingly important to take the development and assessment of graduates' skills, competencies, and knowledge into account. Having the right people in the right jobs is vital in a knowledge based economy. A better understanding of the marketplace and the skills and competencies required for success within it is essential, as is ensuring that those needs are

addressed through the programming available in higher education institutions. In addition, by identifying a graduate's aptitudes vis-à-vis stated learning outcomes increases the likelihood of an appropriate fit for defined position descriptions, and assures employers that Ontario's graduates are ready to hit the ground running". (p. 13)

Outcomes-Based Education: A shift of Paradigm

In the beginning of her paper, Lennon refers to Nusche's (2008, p. 8) statement on OBE and points out that the "outcomes-based evaluation is a relatively new model of measuring' education, and has only recently been introduced into higher education systems" (p. 4). The main questions are what outcomes-based education is, how long it has been introduced into higher education systems and does OBE represent a paradigm shift? SPT Malan, Professor of the Department of Teaching and Training Studies, Faculty of Education, University of Pretoria tackles these questions in his paper 'The New Paradigm of Outcomes-Based Education in Perspective' by tracing the roots of OBE and putting the outcomes-based education into perspective. In his effort to trace back the origins of OBE, Malan refers to William Spady as the leading advocate of this educational system and believes that based on Spady's studies, the outcomes-based education has not been newly introduced into higher education systems.

Spady defines OBE as "a comprehensive approach to organizing and operating an education system that is focused on and defined by the successful demonstrations of learning sought from each student. Outcomes are clear learning results that we want students to demonstrate at the end of significant learning experiences and are actions and performances that embody and reflect learner competence in using content, information, ideas, and tools successfully (Spady, 1994, p.1-2)". Regarding the OBE paradigm, Spady states: "WHAT and WHETHER students learn successfully is more important than WHEN and HOW they learn something (1994, p. 8)". Spady "concedes that the world is filled with examples of outcomes -based models, and even that outcomes-based systems go back at least 500 years to the craft guilds of the Middle Ages. The concept of outcomes-based models and systems is therefore not new (1994, p. 4)".

Malan builds up on Spady's studies and concludes that "OBE is firmly rooted in past educational approaches and does not represent a paradigm shift as advocated by OBE proponents. At best OBE can be described as an eclectic educational philosophy taking the best from previous approaches and framing it in a new visionary system that is appropriate to the needs and demands of a democratic South Africa. As in the case of previously highly publicised - but at some stage discredited - educational approaches, only time will reveal the true value of OBE." (Malan, 2000, p. 28)

However, Malan recognizes the positives sides to OBE and endorses Spady's vision of OBE as 'a systems transformation approach'. "There are many positive sides to OBE, as its transformational approach indicates. It brings about a national focus on education as a means to an end and not an end in itself. It forces uncoordinated and laissez-faire educational planning, managing and teaching practices into the background and introduces strategic educational planning that is aimed at achieving results." (p. 28)

In the end, Malan emphasizes the role of the educational practitioners, learners and parents in creating a successful OBE model. "Learners have to assume greater responsibility and actively participate in the learning process. Educational practitioners have to become more attuned to planning and managing learning environments and must be committed to the ideal of valid and reliable assessment. Parents have to exercise their democratic right to ensure that the quality of education remains unquestionable and that learners are properly prepared for life after school or higher-education studies." (p. 28)

At this point, we should get back to Lennon's thesis statement where she argues that "research shows that students, faculty and employers all benefit from defined learning outcomes. Students are better able to make informed choices, faculty are able to translate outcomes into skills and employers gain a better understanding of what they can expect graduates to know and be able to do" (Lennon, p. 4). The following sections will examine Lennon's statement by the analyses of more scholarly papers and the literature review of the positive impacts of OBE on the quality of the learning environment.

The New Faculty Roles in an Outcomes-Based Education System

In the EUA Bologna Handbook, Kennedy et al. (2006) states that "as already indicated, international trends in education show a shift from the traditional 'teacher-centred' approach to a more 'student –centred' approach. While traditionally the focus was on what the teacher did, in recent years the focus has been on what students have learned and can demonstrate at the end of a module or programme" (p. 24).

Whilst there has been some criticism of outcome-based education in the literature, a learning outcomes approach to teaching and learning has received strong support at an international level. For example, Jenkins and Unwin (2001) assert that learning outcomes:

- Help teachers to tell students more precisely what is expected of them.
- Help students to learn more effectively: students know where they stand and the curriculum is made more open to them.
- Help teachers to design their materials more effectively by acting as a template for them.
- Make it clear what students can hope to gain from following a particular course or lecture.
- Help teachers select the appropriate teaching strategy matched to the intended learning outcome, e.g. lecture, seminar, group work, tutorial, discussion, peer group presentation or laboratory class.
- Help teachers to tell their colleagues more precisely what a particular activity is designed to achieve.
- Assist in setting examinations based on the materials delivered.
- Ensure that appropriate teaching and assessment strategies are employed. (Kennedy et al., p. 24-25)

'New Faculty Roles in Learning Outcomes Education: the Experiences of Four Models and Institutions' is the title of a paper written by Elizabeth A. McDaniel, Dean of Faculty and Academic

Programs at the Information Resources Management College of National Defence University along with B. Dell Felder, Deputy Vice President for Academic Affairs at Zayad University in the United Arab Emirates; Linda Gordon, Associate Professor of Liberal Arts at Nova Southeastern University; Mary Ellen Hrutka, Associate Vice President for Academic Affairs and Dean of Undergraduate Programs at the University of Maryland, University College and Stephanie Quinn, Provost at Millikin University.

The paper states that "innovative models that focus on learning outcomes engage faculty in new ways of facilitating and assessing learning, while their institutions seek to support and reward their participation. Innovators from four different institutions provide an overview of their approaches to implementing principles of outcomes-based education, compare their models, and explore the changes that are precipitated in the roles, rewards, resources, structures, and models. While the four institutions and models differ on several significant variables, the innovators identify common key elements and issues that the academy must address in order to transform the educational experience and culture to a more learning-centered enterprise." (McDaniel, Felder, Gordon, & Hrutka, 2000, p. 143)

The philosophical worldview of this study is the social constructivist approach as proposed by Lennon's research and enhanced by Malan. "With a socio-constructivist base that makes allowances for stakeholder input, OBE may become a living educational model, adapting to new demands and needs" (Malan, 2000, p. 28). While Lennon's approach to inquiry is the qualitative method which identifies the European Model of OBE and its subsequent components as a strong case study, McDaniel explores the experience of her team within 4 different outcomes-based education models using again a qualitative method but this time the research strategy is a phenomenological approach. In this respect, she facilitates the dialogue between four stakeholders by asking seven open-ended questions about faculty's experiences in different OBE models.

> The institutions represented by the authors of this article are engaged in the implementation of four very different learning outcomes models. Despite the differences in their institutional missions and cultures and the models they are implementing, the four programs discussed: embody the new learning paradigm, assess students against clearly

> articulated learning goals, move students through the curriculum based on their demonstration of competency, encourage student learning outside the traditional credit-for-contact model, foster innovative pedagogy and the use of information technologies and engage full-time and part-time faculty in new roles. (McDaniel et al., p. 145)

"Phenomenological research is a strategy of inquiry in which the researcher identifies the essence of human experiences about a phenomenon as described by participants. Understanding the lived experiences marks phenomenology as a philosophy as well as a method, and procedure involves studying a small number of subjects through extensive and prolonged engagement to develop patterns and relationships of meaning. In this process, the researcher brackets or set aside his or her own experiences in order to understand those of the participants in the study." (Creswell, 2009, p. 13)

> The authors of this article, panellists at the 1999 AAHE Forum on Faculty Roles and Rewards, are committed to innovative outcomes-oriented undergraduate education. They represent institutions at various stages of implementation of their learning outcomes models. Both public and independent, their institutions enrol residential and commuter, traditional age and adult students; they use a wide range of delivery methods, distance education, and instructional technology. In a question and answer format we discuss the essential elements of the various learning outcomes models and the accompanying transformation of faculty roles, including issues related to faculty governance, academic freedom, load and productivity issues, incentives and reward systems, facilities and funding. (McDaniel et al., p. 145)

The thesis statement of this study highlights the shift from "the old instructional paradigm to the new learning paradigm, a shift in the purpose of institutions from producing instructions to providing learning" (McDaniel et al., p. 143).

> In many institutions of higher education a significant shift is underway in educational philosophy and focus and in programs, courses, and format. This shift is from being teacher-centered to being learner-centered, and more specifically learning outcome-

> centered. The shift may be occurring because of the demands for accountability related to funding or because faculty are intrigued with new ways of teaching and learning that put student learning at the center of the academic enterprise. (p. 143)

First, the authors set the background and create an understanding of the research issue by a literature review of the topic through the works of Davis (1995); Dolence & Norris (1995); Guskin (1994); Plater (1995) and Astin (1992). "Throughout this decade futurists have been writing about the coming revolution in higher education. Their forecasts have been precipitated by new technologies and the Internet, pressures of accountability and accreditation, competition from corporate distance education providers, and the emphasis on assessment of student learning. Alexander Astin (1992) advocated a new model for evaluating institutional quality that is based less on institutional resources (e.g. library books, research funding, faculty awards, student entrance examination scores) and more on the student talent developed by the institution. Faculty are challenged to do whatever it takes to enhance student earning, and the value added by the educational experience becomes the measure of institutional quality". (McDaniel et al., 2000, p. 144)

Then McDaniel (p. 146-155) creates a dialogue with the participants around the following questions:

1. In the learning outcomes models being implemented at your institutions, how have learning, teaching, and the educational process been reconceptualised?
2. Learning outcomes models are built around common learning outcomes for student performance that cross, overlap, and transcend specific course requirements. How do these models challenge faculty to collaborate, commit, share, and communicate with each other in new ways?
3. Does collaboration on academic outcomes prompt any faculty to resist on the grounds of academic freedom?
4. How are existing academic structures and systems modified to support the development of learning outcomes models?

5. What are the rewards or incentives for faculty to re-invent themselves or otherwise assume radically different roles?

6. What impact do these models have on faculty time commitment and the formulation of faculty load?

7. Can students learn and master outcomes separate from courses?

The SWOT analysis of the answers helped to identify the following issues as the most important challenges to be considered in a shift from the old instructional paradigm to an outcomes-based education model within the 4 institutions which were at various stages of their learning outcomes models at the time of the study (See Table 1).

- Faculty's belief in a shift to the OBE model,
- Faculty's challenge to shift from individual work to teamwork.

In conclusion, the role of the faculty in creating a successful shift from the old educational model to OBE is being recognized as a crucial factor that needs to be considered in a policy-making decision process. "From our earlier dialogue we learned that the most important ingredient in learning outcomes models of undergraduate education is faculty involvement and ownership and that with such involvement many apparently insurmountable issues can be overcome" (McDaniel et al., p. 156). Some of the proposed rewards that would ease the involvement of the faculty in this process are (p. 153-156):

- Hiring someone in the Office of Academic Affairs to respond to faculty requests for data relating to teaching and learning and also hiring someone to direct institutional research to help shift the focus of the university's data infrastructure and systems to support faculty efforts to improve student learning;
- Consensus-building across as well as within disciplines;
- Faculty get course releases or stipends to have the time and resources to develop learning modules;

- Intrinsic rewards provide powerful incentives for our faculty... The personal and intrinsic rewards for faculty stem from commitment to student success and mastery;
- Rewards also come from feeling empowered, having an influence on the quality of the educational programs, and enhancing excellence in teaching;
- To offer participating faculty some financial rewards that reflect the University's commitment and appreciation for their efforts;
- Other forms of reward are funding to attend national conferences, invitations to national experts to spend time on our campus, and support for other forms of professional growth.

The analysis of the answers to the questions shows that while the phenomenological strategy undertaken by the researchers is aligned to their philosophical worldview and is effective in the identification of the common key elements and challenges that must be addressed in all four institutions, a quantitative approach (interview, survey) which could later study the relationship between several significant variables that differentiate the institutions – status, faculty, stage, role of assessment, outcomes, credits for prior learning, experiential learning, technology- and the participants' experiences would create a better understanding of the mechanism of OBE within diverse learning environments.

Thus, the research question could be reformulated in this way: How would the above mentioned variables impact the roles of faculty in an OBE model?

> Because faculty are engaged in new and evolving roles in these models, the determination of faculty load remains one of the important unresolved issues. In many ways outcomes-oriented education is radically different from the current credit-for-contact model of higher education; and its implementation requires significant adjustment to most institutional policies, procedures, and structures. From our experience, the benefits for student learning and the challenges and rewards of these new faculty roles make re-thinking higher education structures and policies well worth the effort. (McDaniel et al., p. 156)

Table 1- SWOT analysis of the new faculty role in OBE: The experiences of four models and institutions

Strengths	Weaknesses	Opportunities	Threats
Outcomes-based learning and assessment approaches comprise effective mechanisms for improving the educational experiences of our students and an effective tool for faculty, programs, and departments in order to obtain better results in terms of student learning for their investment of time and resources. OBE reflects a shift in language and in power; in the social role of higher learning; in learning as public, explicit, and shared, and as a communal enterprise. Faculty determine the appropriate learning strategies and assessment strategies to match the intended outcomes. The faculty who volunteered to participate because they believe in outcomes-based education are benefiting from their collaboration and opportunities to share creative strategies to facilitate learning.	It has been a challenge to shift from individual faculty work to faculty teamwork. A special challenge has been compliance with external regulations and accreditation standards. Faculty members sometimes complain that the shift to learning outcomes takes time away from the core mission of teaching and time spent with students. Some faculty are afraid of change because they may feel the changes mean someone wants to get rid of their course or force them to change their way of teaching.	Many of the faculty believe, however, that the implementation of learning outcomes approaches will lead to greater efficiency and quality in teaching and learning; but for faculty this shift takes a leap of faith. No specific model of outcomes-based education was championed, and the faculty were free to determine how OBE would be designed. Focus on outcomes can lead to considerable savings of a faculty member's time and effort, to instruction that is better geared to the students' preparedness without loss of standards, and ultimately to greater learning. Work hard to develop a culture of civility, respect and collaboration. Be able to call upon shared commitments and values to get you through some of the rough spots.	The belief that a shift to an outcomes-based education environment might 'normalize' the educational experience of students or reduce learning to its lowest common denominator, produce a mechanistic view of teaching and learning and oversimplify the very complex and nuanced learning processes that this requires. Some resistance to outcomes-based approaches despite the fact that the University is dedicated to teaching as well as research. A prior condition for a shift to learning outcomes education is an understanding of faculty's time and their expectations about time. Disagreements over intended outcomes and standards for assessment can divide the academic community Disincentives, such as promotion and tenure structures that currently do not support this kind of investment of faculty time and effort.

Outcomes-based Education and the Concept of Knowledge

Richard G. Berlach, Professor of the College of Education, University of Notre Dame Australia in his paper entitled 'Outcomes-Based Education and The Death of Knowledge' challenges the OBE paradigm and rejects the positive aspects of this educational model by first referring to the changing meanings of the term. "Outcomes-based education (OBE) is like a chameleon – at the point when its defining attributes are becoming discernable, it changes form and colour. Even its chief architect keeps changing his mind, moving from traditional OBE through transitional OBE to transformational OBE (Spady, 1994; Spady and Marshall, 1991) – terms which, rather than clarify, morph the monster further". (Berlach, 2004, p. 2)

In his introduction, Berlach states that:

> The purpose of this paper is twofold. First, to briefly examine how the OBE agenda, which is now in full swing across Australia, is being interpreted, implemented, and received by the community of educators. Second, to focus on what I perceive to be serious deficits of OBE as a paradigm. Many have in a blinkered fashion lauded OBE's virtues but failed to address its glaring deficits. In part, my paper aims to provide the necessary corrective. In all of this, I intend examining the Federal context in cursory fashion and concentrating on the State with which I am most familiar and where OBE has now been the modus operandi for some ten years – Western Australia. (Berlach, 2004, p. 2)

Berlach approaches the issue of the outcomes-based education by holding to the philosophical assumptions of the advocacy/participatory worldview. "This position arose during the 1980s and 1990s from individuals who felt that the postpositivist assumptions imposed structural laws and theories that did not fit marginalized individuals in our society or issues of social justice that needed to be addressed. This worldview is typically seen with qualitative research as well... in the main, these inquirers felt that the constructivist stance did not go far enough in advocating for an action agenda to help marginalized peoples. An advocacy or participatory worldview holds that research inquiry needs to be intertwined with

politics and a political agenda. Thus, the research contains an action agenda for reform that may change the lives of the participants, the institutions in which individuals work or live, and the researcher's life". (Creswell, p. 9)

Therefore, Berlach's action agenda for reform is rethinking the OBE paradigm. "OBE lacks reflexivity. Even in the face of ever-mounting opposition, OBE keeps metastasising with apodeitic-like resolve. The bureaucrats and technocrats of the Education industry, probably because of the time and funds already expended, continue to justify and prop up a paradigm which experienced educators are finding increasing loathsome" (p. 11). He believes that the outcomes-based education has changed the lives of the educators, the academia as well as his self. "OBE is currently the preferred model via which compulsory education in Australia is being interpreted. It is a train with a full head of steam. Extending the metaphor, I see a massive derailment in the not too distant future". (p. 3) Then, Berlach grounds his discussion around 5 key concerns:

1. "OBE is confusing. Because of its amorphous and nebulous nature, OBE is not easily definable" (p. 3),
2. "OBE is jargon-impregnated... Jargon can so easily be mistaken for substance – it can sound so impressive, promise so much, but deliver so little" (p. 5-6),
3. "OBE is deceptively transformative. It takes key terms from the lexicon of Education, ascribes to them new meaning, and then attempts to mould incumbents accordingly" (p. 6),
4. "OBE is suffocating teachers... Rather than providing teachers with an 'ah ha' experience in terms of interpreting the Progress Maps, my summation is that the Guides will merely add to the interpretative murkiness which already exists, that is, another layer of confusion" (p. 7-9),
5. "OBE suffers from assessment overload... Teachers are expected to produce never-ending tomes of evidence, usually in the form of student portfolios" (p. 9).

Based on the above considerations, Berlach argues that the consequence of the implication of OBE in higher education is the death of knowledge through its different aspects. First of all, he states that "the lack of knowledge occurs through lack of conceptual clarity" (p. 5) in this aspect that "the language of

OBE is the jargon of corporate business, or what Kohn (1993) has termed the 'market place'. It appears to be corporatisation applied to education. OBE is obsessed with accountability, or more accurately, hyper-accountability, with everything requiring proof and an adiposity of evidence" (p. 3). In this regard, Berlach believes that outcomes are more about outputs rather than inputs, products rather than processes.

> OBE advocates misunderstand education. Education is not a product defined by specific output measurers; it's a process, the development of the mind... Outcome-based education is not education; it is experimentation. It is not academic; it is psychological. It appears that the time has arrived to look elsewhere for theoretical enlightenment. (p. 4)

Secondly, Berlach claims that "the death of knowledge occurs through jargon which obscures rather than illuminates the significant" (p. 6). Based on his comparative study of the terminology of OBE used by Brendan Nelson (2004), the Australian Government Minister of Education, Science and Training, and the language found in Spady, who is being recognized by Berlach as "the educational consultant and architect of OBE", he finds the use of an 'ideologically-laden language' that is 'frighteningly unmistakable'.

> One always needs to scratch beneath the veneer of jargon and search for a well developed theory which has currency in praxis. If such is not found, then in the words of the venerable William Shakespeare, there may well be 'something rotten in the state of Denmark'. (p. 6)

In his third concern, Berlach asserts that "the death of knowledge occurs when competent teachers are forced out of the profession by ideological aggravation" (p. 7). "A standard dictionary definition of teaching (e.g. OED) includes reference to imparting knowledge or giving instruction. OBE largely strips teachers of this function and makes them educational technicians. They are to become facilitators, guides, curriculum developers, child-minders – in short – bureaucrats. Few teachers, I would venture to say, joined the profession with the idea of becoming indentured servants to the OBE agenda" (p. 6). Thus he assumes that "fewer and fewer teachers, it seems, are prepared to embrace the OBE agenda and consequently, are opting out of the profession" (p. 7).

The fourth consideration is related to the amount of preparation needed for a teacher who performs under an OBE paradigm. Thus Berlach maintains that "the death of knowledge occurs when hyper-planning takes precedence over pedagogical imperatives" (p. 9).

> At the risk of being accused of revisionist/modernist over-simplification, in the past, a WA teacher whose goal was to teach a poem would have done so. This is no longer the case. The same teacher is now required to wrestle with 13 Overarching Learning Outcomes and 5 Values outcomes from the Curriculum Framework (1998); several Learning Area Outcomes... and information contained within a plethora of "supporting materials". To teach a poem?? To their credit, many already overworked teachers are trying their best to comply. My question is, why should they have to? What evidence is there that this is a superior way of teaching a poem? What evidence is there that all of this planning helps to achieve better student learning? (p. 7-8)

Finally, Berlach argues that "the death of knowledge occurs when evidence of learning becomes more important than the learning itself" (p. 11). "In a recent NSW government commissioned report on OBE; Eltis (2003) indicated that the following comment was typical of what teachers were expressing:

> Teacher workload, including paperwork, preparation and selection of assessment tasks, re-writing of report formats, has increased enormously since 1995. Not only are we still coming to terms with all of the new syllabus and associated documents, there are too many other added pressures on teachers that are expected to be included in an already overfull teaching load. (p. 9)

Berlach later bases his conclusion on a statement from his colleague.

> I asked my colleague whether her school was in any way committed to the notion of OBE. With a wry laugh she simply said 'no, outcomes-based education is for the masses, here we teach the country's future leaders'... For the privileged, it seems that the impartation and consequent acquisition of knowledge is still a teaching-learning priority.

> And for the rest of us? A continuing diet of outcomes I'm afraid. But then, as education authorities well know, the starving will eat anything. (p. 11)

The critical analysis of Berlach's study shows a lack of scientific evidence. In order to agree with the arguments boldly laid down in this paper, we need more relevant data regarding such claims as 'competent teachers are forced out of the profession by ideological aggravation'. Then we might ask how the researcher knows about the occurrence of this phenomena, is it based on his personal encounter or an evidenced-based research? And could this claim form the basis of our understanding of the effectiveness of the outcomes-base education?

A comparative analysis of Berlach's study against McDaniel's research discussing the same issue demonstrates the distinct characteristics of philosophical worldviews and their related research methodologies in shaping the perception of the audience related to a specific topic. While, McDaniel and her team investigate the role of faculty in an OBE system from a constructivist point of view, applying the phenomenological strategy of open-ended questions, Berlach's transformative philosophy is based on a narrative form of inquiry based on his own experience as well as his colleagues. They both point out the workload of the faculty in the new OBE system but conclude in a completely different ways. While McDaniel insists that "the benefits for student learning and the challenges and rewards of these new faculty roles make re-thinking higher education structures and policies well worth the effort" (McDaniel et al., p. 156), Berlach claims that "for the sake of expediency and possible professional advancement, teachers may be forced by bureaucratic expectations to maximise the measurable and minimise, or even ignore, the more affectively-freighted aspects of learning. If this happens, then not only would teaching have been redefined as argued earlier, but so too would have the very concept of Education" (Berlach, p. 10-11).

In order to understand the role of OBE in student learning as emphasized in Lennon's thesis statement, the next discussion embodies the relationship between the practices for assessing and using student learning outcomes and the improvement of student success by the critical analysis of the 21st

Century Learning Outcomes Project that involved sixteen diverse community colleges in the US and Canada.

Outcomes-Based Education and Student Success in Community Colleges

The paper entitled 'Learning Outcomes for the Twenty-first Century: Cultivating Student Success for College and the Knowledge Economy', written by Cindy L. Miles and Cynthia Wilson, and published in 2004 in the 'New Directions for Community Colleges Journal' "provides an overview of the League for Innovation in the Community College's project on learning outcomes. The 21st Century Learning Outcomes Project was a three-year project involving sixteen diverse community colleges that supported the development of practices for assessing and using student learning outcomes to improve student success" (Miles & Wilson, 2004, p. 87).

> This project is Stage Two (Implementation and Advocacy) of a larger-scale League effort to bring new outcomes-based standards for student learning to the community college field. In Stage One (Planning and Research), the League, supported by The Pew Charitable Trusts, researched the extent of U.S. and Canadian community college efforts to define, assess, and document student achievement of twenty-first century learning outcomes (Wilson, Miles, Baker, & Schoenberger, 2000). Stage Two was a three-year project funded for the first two years by The Pew Charitable Trusts and continued with support from the League and participating colleges through June 2003.

The philosophical worldview proposed by this study is the pragmatic approach. "Pragmatism as a worldview arises out of actions, situations, and consequences rather than antecedent conditions (as in postpositivism). There is a concern with applications- what works- and solutions to problem. Instead of focusing on methods, researchers emphasize the research problem and use all approaches available to understand the problem" (Creswell, p. 10). The main goal of this project was "to increase the capacity of community colleges to define and document the acquisition of the critical competencies that students need to succeed in the workplace, in transfer education, and in today's society" (Miles et al., p. 88). In this order, "all sixteen colleges developed learning outcomes Web sites to share their project plans, reports,

and activities as well as self-assessments, outcomes rubrics, and assessment or documentation models" (p. 88).

"Pragmatism is not committed to any one system of philosophy and reality. This applies to mixed methods research in that inquirers draw liberally from both quantitative and qualitative assumptions when they engage in their research" (Creswell, p. 10). In this study, the researchers used the theoretical lens (advocacy/participatory) as an overarching perspective which explains their design of both qualitative (focus group and site visits) and quantitative (surveys) methods. As mentioned before, this project was conducted in two stages and researchers used several methods of inquiry in their study by undertaking transformative mixed methods procedures. In the first stage of 'Planning and Research', the researchers studied the feasibility of their project by undertaking the qualitative method of focus group. "Preliminary focus groups with college leaders in Phase 1 of the project convinced the funding agency and project directors that community colleges varied too much in structure, governance, and culture to expect a single common solution to such a complex endeavour. Differences notwithstanding, the project partnerships and interchanges led to similarities in outcome sets and in assessment and documentation strategies". (Miles et al., p. 89)

> Drawing on results from a preliminary survey and document analysis conducted by League staff, the focus group identified a set of eight broad categories of 21st century skills, encompassing the following so-called hard skills of literacy, numeracy, and technical ability, as well as soft skills such as teamwork, communication, problem solving, and the ability to interact with diverse groups: communication skills, computation skills, community skills, critical thinking and problem-solving skills, information management skills, interpersonal skills, personal skills, technology skills. (p. 89-900)

Then, the findings collected from stage one of the project set the ground for the second stage of 'Implementation and Advocacy'. At this point, researchers gathered data from site visits and surveys. "Using these results, the League conducted five institutional site visits and a survey of U.S. and Canadian

community colleges to test agreement on this set of 21st century skills and to assess the status of North American community colleges in establishing and assessing student achievement of such skills" (p. 90).

The thesis of this study emphasizes MacClenny's statement (1998) which describes some of the underlying causes of a growing demand and an external pressure for demonstration of learning outcomes: "The ugly truth about the current situation in American higher education, even in most community colleges, is that we do not have a clue what and how much students are learning- that is, whether they know and can do what their degree (or other credential) implies" (Miles et al., p. 87).

The above statement shows that there was no evidence that could define, demonstrate and measure the quality (what) as well as the quantity (how much) of learning at that time. Thus the research methodology using both qualitative and quantitative strategies could be justified as the best tool to gather information in order to respond to the project's goal of "enhancing the capacity of community colleges to define and document students' acquisition of critical learning outcomes" (Miles et al., p. 88).

Each college worked independently, with feedback and support from partner colleges and project staff, toward the common project goal by focusing on five institutional objectives:

- Define. Define a set of core competencies that encompass 21st century learning outcomes.
- Develop. Develop a set of curriculum components for 21st century learning outcomes with specific learning outcomes for each competency, levels of performance that students should meet, concrete indices of student work to demonstrate each level, and assessment strategies for measuring student achievement at each level.
- Deliver. Identify and implement best practices and multiple models of delivery and assessment of 21st century learning outcomes.
- Document. Develop non-traditional methods for documenting student achievement of 21st century learning outcomes beyond traditional grades, credits, and degrees.
- Disseminate. Share model programs and practices with other institutions. (p. 88)

The work of colleges toward the project's goal ended up with some unexpected outcomes and achievements, the important result of this project being recognized a shift of approach caused by the implementation of all five institutional objectives. "Although the project began with the goal of cultivating a focus on learning outcomes, several college teams quickly found this work to be a catalyst for major institutional change... particularly for colleges that had extensive institutional effectiveness and program review processes but no comprehensive processes for assessing and documenting learning at the individual student level... the project served as a means of connecting a number of loosely related initiatives all aimed at improving the quality of undergraduate education." (p. 97)

The challenges of undertaking the outcomes-based education approach identified by this research are being mentioned as the following (p. 97):

- Lack of collaboration among disciplines and other groups within the institution
- Lack of knowledge about assessment processes and tools
- Lack of awareness of the need for outcomes-based education
- Lack of appropriate, effective assessment tools and models
- A perception that some important learning outcomes are not measurable
- Traditional insulation from accountability for individual student learning at the classroom level
- Traditional resistance to self-assessment in higher education
- Lack of incentive for outcomes-based efforts resulting from past external requirements for accountability, funding, and policy that are rarely tied to individual student learning
- Increasing demands and constricting resources, which leave little time or incentive for educational reform efforts of this magnitude

The analysis of these challenges shows that the lack of awareness about the importance of the outcomes-based education as well as it assessment tools and strategies could be identified as the roots of other challenges such as the lack of collaboration among different groups within the institution and the perception that some outcomes are not measurable. However, the issue of assessment in an OBE

educational system remained as the main concern among different participants. "Throughout the project, participants universally identified assessment as the most difficult aspect of this work, and during seminars, focus groups, and site visits they explored the reasons for this determination" (p. 98).

The report concludes by an effective list of recommendations stating that almost all sixteen colleges that joined this research initiative are still engaged in implementing their learning outcomes agenda more than three years later and recognizing that "a learning outcomes approach can help a college demonstrate to its students that it offers them relevant curricula, meaningful information about their learning achievements, and more control over their learning to help them prepare for success in their professional and personal lives" (p. 99).

> Other institutions embarking on a learning outcomes journey might take the following lessons from the pioneering experiences of these sixteen forerunners:
>
> - Learning outcomes implementation must be a continuous campus conversation;
> - The impetus for adopting an outcomes-based approach should be the institution's stated and lived value of student learning;
> - Since the accountability movement is not progressing in some colleges with the speed and urgency it might if the need were critical, other motivators can be effective;
> - Faculty should be deeply engaged and supported from the onset in the leadership of any effort toward outcomes-based learning;
> - A college should implement outcomes-based learning using a model that fits its culture and value. (pp. 98-99)

Conclusion

Outcomes-based learning is not a new educational system but has been newly emphasized as a transformational perspective in higher education. This approach places the learner at the center of the learning process and introduces strategic educational planning that is aimed at achieving results. Therefore, the questions are 'what' and 'whether' rather than 'how' and 'when'; so 'how would the students learn?' will be determined by 'what should the students learn?'. In this paradigm, education becomes a means to an end rather than an end in itself.

Study shows that OBE is being recognized as the most important educational component of societies with a knowledge-based economy. In order to remain competitive in the global market, Canadian higher education has also started to show a significant shift toward this new direction. Despite the recognition of the importance of OBE in the future of post-secondary education in Canada, there is a lack of fresh research regarding the length and depth of this new implementation and its subsequent consequences in both colleges and universities. Based on the literature review, the critical analysis of the topic and my personal experience as a teacher, I believe that OBE is a transformational approach which could be considered as an effective tool in solving the issues regarding both quality and mobility in Ontario's higher education. In terms of policy making, there is a need for a bottom-up approach as well as new policies at the government level. As the objective of my research is to bring a culture of change based on the study of the current situation, my philosophical worldview would be based on a transformative mixed-methods procedures in which I intend to use the theoretical lens of advocacy/participatory. An explanatory research will help me to specify the discipline/program and the educational environment.

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Understanding the Essence of the Outcomes-Based Education (OBE) and Knowledge of its Implementation in a Technological University in the Philippines

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Marie Fe D. De Guzman[1], Domingo C. Edaño[2], Zenaida D. Umayan[3]
[1,3] College of Teacher Education, [2]Graduate School, Ramon Magsaysay Technological University, Zambales, Philippines
[1]*mariefedeguzman2016@gmail.com*

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Abstract - *The paper offers discussions of the result of adoption of Outcomes-Based Education (OBE)by the Ramon Magsaysay Technological University (RMTU), Zambales most especially on the aspect ascertaining the extent of understanding of the essence of OBE and the knowledge of OBE implementation. The study was conducted during the first semester of 2015 among the 272 faculty members. The research is descriptive and quantitative. Using the weighted mean, it was found out that the faculty members manifest a great extent of understanding of outcomes-based education primarily the active participation of students in the learning activities, however, faculty members' perception indicated a moderate extent of understanding on the minor role played by the educators in the teaching-learning situation and planning activities that focus around the learners. The faculty members reported a great extent of knowledge of the outcomes-based education mainly the use of different techniques to assess student learning, though there is a moderate extent of knowledge on curriculum alignment and mapping and construction of Program Educational Objectives (PEOs) of the different Colleges. The areas of the outcomes-based instruction which were proposed to be offered for faculty development were seminars and trainings in the syllabus preparation-OBE format, on the utilization of student-centered strategies and on curriculum mapping.*

Keywords: *Essence of OBE, Implementation, Faculty Development, Knowledge of OBE, Outcome-Based Education*

INTRODUCTION

Exploring new ways for designing tertiary education is a worldwide pursuit. There is a need for tertiary education to provide both professional knowledge/skills and all-round attributes to the graduates so as to enable them to face the diversified yet global demands of the 21st century society. The attention now of different institution of higher education in different nations are on students learning outcomes and assessment. This has received increasing calls since 1980's in many countries such as USA, UK and Australia.

Outcome-based education is the main thrust of the Higher Education Institutions in the Philippines today. The OBE comes in the form of competency-based learning standards and outcomes-based quality assurance monitoring and evaluating spelled out under the Commission on Higher Education (CHED) Memorandum Order (CMO) No. 46, s. 2012 [1]. The outcomes provide details against which the graduates of the curriculum can be measured and facilitate the quality-assurance process [2]. The approach of instruction is student-centered, assessment is competitive, and the classroom is where teacher facilitates and students take priority over the acquired knowledge and developed skills.

OBE is being recognized as the most important educational component of societies with a knowledge-based economy. In the case of Canadian higher education, Hejazi [4] revealed that the institution started to show a significant shift toward this new course in order to stayglobally competitive. In the Philippines, Llanes [5] stated that when TIP implemented the OBE/OBTL, the actions the institution took were dissemination of the nature of the OBE, alignment and mapping of the curriculum, assessment of output aspect and improvement of quality of instruction. Data gathered for Liu's [6] study pointed to the conclusions that the implementation of OBE has been integrated into on-

going practices such as program development and review, and curriculum mapping and renewal. Laguador and Dotong [7]stressed the necessity of a comprehensive knowledge and understanding of outcomes-based education in order to realize its objectives when applied. Borsoto et al. [9] on the other hand stressed that the assistance of the administration particularly affording the needed resources to sustain the implementation of the outcomes-based education is noteworthy for its success.

The success of the implementation of the OBE depends heavily on educators, hence, compete understanding and knowledge of OBE are vital [10].Killen [11] claimed that OBE can lead to students' success in learning because it encourages teachers to be well prepared. According to Ramoroka [10], the features of OBE guide the teachers in ways that they can show authority over the process and the approach.

What RMTU really needs now is a full and complete understanding and knowledge by the implementers of the essence of the OBE and its application in classroom instruction.OBE in RMTU started in 2014 and like many other universities in the country and in Asia faces challenges and decisive transformation to meet the demands of global standards. The introduction of the OBE in RMTU resulted in many issues and concerns such as major shift of the teaching practices from the traditional and different beliefs and assumptions of the OBE's value to the system and the graduates. Davis [2]raised that implementation of the OBE approach demands some changes in the school's system and requires intensive planning activities. Liu[6] argued that the major challenges encountered during implementation include faculty buy-in and the time commitment required of faculty members to get involved in OBE-related practices and faculty members' educational beliefs about OBE can act as an enabler or a challenge for OBE implementation.

Despite the challenges and adjustments, RMTU has an obligation to ensure that its educational programs excel in all aspects and respects. In so doing, the researchers believe that understanding of the essence of the OBE and knowledge of faculty members in terms of its implementation in the University are important steps and first to be taken into consideration.Berg [12] stressed that an institution should be positive and open for changes and outcomes-based education is one of the innovations in education and absolutely one essential part of the changes.

In a way, the result of this study would serve as monitoring tool on the status of the implementation of the OBE in RMTU. School heads would be more informed if educators are able to deal with changes or need more assistance. If it necessitates support, further guidance and trainings can be offered to them. Crucial to this is giving them clear guide of what is to be taught. Administrators may also deliberate on how to reshape the structure of the school in support on the integrated nature of the outcomes-based curriculum.

The faculty members of the different Colleges of RMTU on the other hand, would be more mindful that various teaching methods have to be identified and applied to help the learners achieve intended outcomes. In general, the outcomes-based approach guides implementers in the selection of suitable instructional strategies, development and utilization of a wide range of assessment criteria and making decisions whether the learner has achieve the outcome or not.

The Students on the other hand would be provided with the opportunities to learn better considering their learning styles and abilities to help achieve intended learning outcome. As the curriculum is well planned towards student progression, learners' performance would become more efficient.

OBJECTIVES OF THE STUDY

The aim of the study is to investigate the educators' understanding of the essence and knowledge of implementation of the Outcomes-Based Education (OBE) in the Ramon Magsaysay Technological University (RMTU), Zambales.

Specifically, it is the intention of the study to identify the degree the faculty members understand the essence of the OBE; to ascertain the extent the faculty members are knowledgeable of OBE's implementation in the Institution; and to find out what areas of outcomes-based instruction to be offered for faculty development training.

METHODS

This study utilized descriptive research design and quantitative in its analysis. Calmorin and Calmorin [13] pointed out that descriptive method provides essential knowledge for the measurement of all types of quantitative research. This study was conducted in all the seven (7) Campuses of RMTU, Iba, Zambales, Philippines. The appraisal of the understanding of the

essence and knowledge of implementation of the OBE were solicited from the implementers/faculty members. Two hundred two (272) or 100% of the total population of the RMTU faculty members served as the respondents of the study. In research terminology, population is defined as all members of any well-defined class of people, events or objects. All available faculty members of the different colleges of RMTU were selected as respondents.

This research study used survey instrument that measured the participants' understanding of the essence of the outcomes-based education and the knowledge of its implementation. The instrument was researcher-made. Prior to that, the researchers conducted extensive review of literature and studies in OBE which form the source of the survey checklist specifically of Laguador and Dotong [7] and Ramoroka [10].The survey checklist contain 23 key items/indicators which had two parts (Essence of the OBE and Knowledge of the Implementation of the OBE). Answers of the respondents are within a scale ranging from 5 (very great extent) to 1 (no extent). There were 9 items added to the survey instrument on the areas of outcomes-based instruction for faculty development training. A set of subject matter experts reviewed and checked the indicators/items for clarity and directedness to minimize the occurrences of misinterpretations. A pilot test was conducted with the 15 Instructors/Professors from the Laboratory High School Department, RMTU, Iba, Zambales, Philippines. According to Cyrus [14], apilot project will afford the researcher a way to check that the research instrument is dependable, free from vagueness and can be easily accomplished.

The approval of the distribution of the survey checklist was secured from the University President and Campus Directors of the seven campuses. The survey checklist was administered by the researcher personally to the respondents. The secrecy of their responses was emphasized. The information, figures and data which were collected from the survey checklist were analyzed, interpreted and summarized accordingly**.** Weighted mean was used in the interpretation on the extent the respondents' understand the essence of the OBE as well as knowledge of OBE implementation.

RESULTS AND DISCUSSION

Table 1 shows the extent of understanding of RMTU Faculty on the essence of the Outcomes-Based Education (OBE).

Table 1. Extent of Understanding of the Essence of Outcomes-Based Education

Indicators	AWM	VI	Rank
1. Teaching is focused always on the outcomes	3.56	GE	13
2. Minor role played by the educators in the teaching-learning situation	3.32	ME	15
3. Plan activities that focus around the learners	3.38	ME	14
4. Active participation in the learning activities	4.08	GE	1
5. Learners searchinformation for themselves	4.07	GE	2.5
6. Learners' understanding is essential in OBE	3.90	GE	11
7. Learners must construct their own knowledge	3.82	GE	12
8. OBE focuses on what the learners' must produce	3.93	GE	9
9. Outcomes keep learners focus in the activity	3.92	GE	10
10. High expectations for learners to do well in class	3.95	GE	7
11. OBE encourages group work and teamwork	4.03	GE	6
12. OBE focuses on the learners in totality	4.05	GE	4.5
13. OBE emphasizes lifelong learning	4.07	GE	2.5
14. OBE caters for the learners' attitude and values	4.05	GE	4.5
15. OBE focuses on the career that a child is to pursue	3.94	GE	8
Overall Weighted Mean	**3.87**	**GE**	

Indicator 4 stated as "Active participation in the learning activities" (4.08) and with verbal interpretation of great extent. It was revealed that the faculty-respondents manifested a great extent of understanding that the essence of OBE is about active engagement and involvement in the classroom. Ramoroka [10] argued that in outcomes-based education, each learner should be allowed enough to show his/her potentials and be provided the most suitable condition for effective learning to occur. Kuh, et al. [15] revealed that an institution that advocates active learning indicate an improved academic performance of the students and perceived educational benefits.

Indicator 5 stated as "Learners search information for themselves" and indicator 13 stated as "OBE emphasizes lifelong learning" obtained a computed AWM of 4.07 (rank 2.5) and both indicators with

verbal interpretation of great extent. The faculty-respondents reported a full understanding of the essence of OBE is to allow and encourage the learners to explore and search knowledge for themselves and OBE is towards developing lifelong learners. Kember [16] acknowledged that perhaps the most important learning outcome is that students learn how to learn for themselves. Rajaee et al. [17] stressed that OBE solicits from the students to develop and acquire traits of self-directedness, ingenuity and autonomy. Rajaee et al. [17] stated that the course planning necessitates the inclusion of the needs of the students to be lifelong learners.

A great level of understanding was manifested among the faculty-respondents on indicator 12 specifying that the essence of OBE focuses on the learners in totality (4.05). There is a great extent of understanding that teaching and learning process should provide an excellent education for all students. The faculty-respondents also have a great extent of understanding for indicator 14 stating that the essence of OBE is to cater for the learners' attitude and values (AWM=4.05, rank 4.5). This condition can be developed if there is an acceptable teacher-student relationships. Kember [16] emphasized that a profound interaction between teacher and students is vital to a smooth teaching and good teacher and student relationship.

The faculty respondents fully understand that the essence of OBE is to encourage group work and teamwork (Indicator 11, 4.03) and there is a high expectations for learners to do well in class (Indicator 10, 3.95). These indicators were ranked 6th and 7th respectively. The faculty-respondents understand well that in the outcomes-based environment, learners are expected to be involved in group task/work and continuously improve their performance.

OBE focuses on the career that a child is to pursue (3.94), on what the learners' must produce (3.93) and while teaching is focused always on the outcomes (3.56) with a verbal interpretation of great extent respectively. The faculty-respondents greatly understand that the essence of OBE gives attention on what profession/occupation the learner has to follow, on learner's output and on outcomes. Hejazi [4] inferred that this approach allows the learners to play essential role in the learning process and introduces strategic educational planning that is aimed at achieving results. Bouslama et al. [18] stated that the true measure of education is how learning empowers further achievement.

There is a great extent of understanding among the faculty-respondents on item 9 indicating that in OBE, the outcomes keep the learners focus in the activity (3.92). The essence of OBE is an active classroom with dynamic instruction wherein learners are involved to produce outputs and products and help improve the quality of learning. Nicholson [19] stressed that teachers plan and employ active instructional setting by allowing the students to be involved in the process. The faculty-respondents understand greatly that learners' understanding is essential in OBE (3.90) and learners must construct their own knowledge (3.82), ranked 11 and 12 respectively. The faculty members greatly understood that OBE instruction considers significantly the learners' understanding and the quality the exits among learners. The faculty members also indicated a great extent of understanding that OBE is towards guiding learners to discover, to construct and to create knowledge. Hence, OBE allows the development of self-directed learners. Perkan Zeki and Sonyel [20] recognized that students learn how to enquire, verify, draw perception and apply what have learned. There is a moderate extent of understanding among the faculty-respondents that in OBE, planning activities that focus around the learners is an educator's task and responsibility (3.38) and minor role played by educators in the teaching-learning situation (3.32), ranked 14 and 15 respectively. In OBE classroom, learners have to be viewed as active individuals. This is true in a classroom wherein teachers plan and execute activities because knowledge can also be shaped through actual experiences. Moreover, OBE classroom is not predominated by traditional methods of teaching. OBE favored instruction which is learner-centered and learner-controlled where in students can influence the content, activities, materials and paces. Ramoroka [10] stressed that teachers are guide for their learners to successfully pursue and achieve the intended goals, therefore, learners have to be given the most important role in the teaching and learning process and for Frey and Fisher [21], a shift from being the authority of the instructional process to student autonomy of learning.

The overall weighted mean computed on extent of understanding the essence of the Outcomes-Based Education (OBE) was 3.87, with verbal interpretation of Great Extent. There is a great extent of understanding of the essence of Outcomes-Based Education among the faculty members of RMTU.

Table 2 shows the extent of knowledge of outcomes-based education implementation.

Table 2. Extent of Knowledge of Outcomes-Based Education Implementation

	Indicators	AWM	VI	Rank
1.	Curriculum alignment and mapping	3.36	ME	7.5
2.	FormulatesProgram Educational Objectives	3.36	ME	7.5
3.	Identifies outcomes the learners need to achieve	3.71	GE	5
4.	Develops higher order thinking	3.76	GE	3.5
5.	Creates a healthy and conducive environment	3.76	GE	3.5
6.	Uses direct and indirect assessment	3.65	GE	6
7.	Assesses learning outcomes in different techniques	3.85	GE	1
8.	Utilizes student - centered approach	3.78	GE	2
	Overall Weighted Mean	**3.65**	**GE**	

There is a great extent on assessing the learning outcomes in different techniques (3.85). The faculty-respondents' level of knowledge in using different assessment techniques for course learning outcomes is of great extent. This also signifies that faculty members in OBE instruction uses varied, relevant and effective measures appropriate to the learning outcome. Moreover, the respondents consider that there is no single best type of assessment and assessment should be aligned with learning outcomes. This result is consistent with Laguador and Dotong's [7] finding indicating that there was a great awareness of the respondents in the different techniques in assessment under the OBE which include quizzes, projects, activities and exercises. Caguimbal et al. [22] found in their study that a clearly defined assessment standards and where in both teachers and students are knowledgeable on how assessment are utilized are ultimate gains of outcomes-based education.

There is a great extent on utilizing the student-centered approach (3.78). The respondents know for a great extent that the teaching and learning process in the OBE utilize of student-centered approaches. Parallel to this result was the finding of Laguador and Dotong [7] indicating that the respondents manifest a great extent of knowledge in terms of how learner centered approach is utilized during the teaching process.

There is a great extent on developing the higher order thinking (3.76). There is a great extent of knowledge among the faculty-respondents that in OBE, appropriate questioning technique towards development of learners' higher order thinking should be utilized. The process of teaching and learning is towards promotion students' critical thinking capacity. The faculty-respondents also manifested a great extent of knowledge on indicator 5 which specified that in the OBE, healthy and conducive environment (3.76) should be created. The respondents are aware that classroom environment and school resources should be suitable to outcomes-based instruction and learning.

A great extent of knowledge among the faculty-respondents in terms of identifying the outcomes the learners need to achieve (3.71) and uses direct and indirect assessment (3.65), ranked 5thand 6th. The faculty members reported a great extent of knowledge that with OBE, it is essential to identify outcomes for learners to achieve and the assessment methods of various skills, knowledge and attitudes. Findings signify that the respondents are fully aware that during instructional planning, identifying outcomes the students need to prepare and accomplish at the end of instruction have to be considered. Moreover, respondents also reported great extent of knowledge that students' skills, knowledge and attitudes have to be assessed using appropriate direct (e.g., conventional and alternative) and indirect (e. g., observations) assessment tools. Rajaee et al. [17] stated that learning outcomes must be clearly explained and presented to students allowing them to set a realistic perception of what they can do, can produce and can achieve.

Indicators 1 stated as "Curriculum alignment and mapping" and 2 stated as "Formulates Program Educational Objectives" gained the least computed average weighted mean of 3.36, ranked 7.5 and with verbal interpretation of moderate extent respectively. There is a moderate extent on the knowledge among the faculty-respondents on curriculum alignment and mapping which should be developed to facilitate curriculum reform/revision. There is also a moderate extent of knowledge among the faculty-respondents in terms of formulation of Program Educational Objectives (PEOs). Findings could mean that the respondents need more opportunities to further their familiarity in PEO making which are achievable and

assessable. Data gathered by Liu [6] study point to the conclusion that the focus of active OBE implementation is defining learning outcomes and developing strategies to ensure students achieve them.

The overall weighted mean computed on extent of knowledge of implementation of the outcomes-based education was 3.65, with verbal interpretation of Great Extent. The faculty members of RMTU reported a great extent of knowledge of OBE implementation.

Table 3. Frequency and Rank Distribution on the Proposed Areas of Outcomes-Based Instruction for Faculty Development Training

	Indicators	f	Rank
1.	Workshops for curriculum mapping	190	3
2.	Formulation of learning outcomes using Bloom's Taxonomy	173	5
3.	Seminars and trainings in the syllabus preparation – OBE format	205	1
4.	Seminars and workshops on student-centered strategies	199	2
5.	Alternative assessment of students' outputs and competencies	176	4
6.	Techniques for higher-order thinking skills	154	9
7.	Seminars and trainings on the update of the OBE	161	6
8.	Table of Specification preparation	158	7
9.	Documentation of evidence of the OBE implementation	156	8

Table 3 shows the frequency and rank distribution on areas of Outcomes-Based Instruction proposed by the faculty-respondents of RMTU for faculty development training.

Faculty-respondents proposed indicator 3 stated as "Seminars and trainings in the syllabus preparation-OBE format" (205, rank 1). The result implies that the faculty-respondents need more skillful planning and understanding of the connection between objectives and learning outcomes in the making of a syllabus-OBE format. There were 199 (rank 2) faculty members who proposed indicator 4 stated as "Seminars and workshops on student-centered strategies". More training on learner-centeredness of instruction was proposed by the faculty-respondents. Rajaee et al. [17] argued that while teaching approach appropriate for OBE is learner-centered, however, utilization of its methods and strategies depend on teacher's preference who implements and does the direct instruction and dissemination of knowledge to learners. Ramoroka [10] stressed that among the aims of OBE is to make the teaching more learner-centered. In the OBE, varied teaching strategies and techniques have to be utilized so as to solicit more students' engagement.

RMTU faculty members proposed indicator 1 stated as "Workshops for curriculum mapping (190, rank 3). Workshops of this activity was suggested by the faculty-respondents. Harden [23] pointed out that the curricular objectives for the OBE are presented in detail. Thus, the planning process and implementation is somewhat complicated and hard to manage both by the teachers and the students. Indicator 5 stated as "Alternative assessment of students' outputs and competencies" was proposed by 176 (rank 4) faculty members. The respondents are aware that there are skills and performances of students which cannot be assessed formally and whether assessment tools really describe levels of achievement, thus further training to be familiar or to have mastery on this aspect was proposed. Mohayidin et al. [24] synthesized that valid and reliable assessment procedure and approaches to evaluate the output and performances of the students is a significant step in producing quality graduates. One seventy three (173, rank 5) faculty members of RMTU proposed indicator 2 stated as "Formulation of learning outcomes using Bloom's Taxonomy". This suggests that in the preparation of course syllabus in OBE, Bloom's Taxonomy has to be well-thought-out by the faculty-respondents.

Other areas proposed by the respondents to be offered as faculty development training were indicator (7) stated as "Seminars and trainings on the update of the OBE" (161, rank 6), indicator 8 "Table of Specification preparation" (158, rank 7) and indicator 9 stated as "Documentation of evidence of the OBE implementation" (156, rank 8). The faculty members of RMTU recognize the necessity to be updated in the OBE. Indicator 6 stated as "Techniques for higher-order thinking skills" was proposed by 154 faculty members and was ranked 9th. The faculty members of RMTU realized the need to develop upon their students HOTs. Mohayidin et al. [24] recognized that teaching should focus and aimed at learners' acquisition of higher order thinking skills.

It is evident that RMTU faculty are aware that they need trainings on the presented areas for

outcomes-based instruction and also mindful of the benefits of these trainings.

CONCLUSION AND RECOMMENDATION

The full implementation of Outcome-Based Education (OBE) in Ramon Magsaysay Technological University (RMTU), Zambales is a priority, hence, it necessitates a full understanding and knowledge of the OBE by the implementers.

On the result of the degree of understanding of the essence of the OBE, it is revealed that the faculty members manifest a great extent of understanding primarily the active participation of students in the learning activities, however, faculty members' perception indicate a moderate extent of understanding on the minor role played by the educators in the teaching-learning situation and planning activities that focus around the learners. On the result of the degree of knowledge of OBE implementation, the faculty members reported a great extent of knowledge primarily the use of different techniques to assess student learning, though there is a moderate extent of knowledge on curriculum alignment and mapping and construction of Program Educational Objectives (PEOs) of the different Colleges. The areas of the outcomes-based instruction which were proposed to be offered as faculty development were seminars and trainings in the syllabus preparation-OBE format, on the utilization of student-centered strategies and on curriculum mapping.

In essence, OBE is a working-backwards with students as the center of the instructional and learning setting. It aims for the development of every student's competencies and talents. Moreover, OBE is quality system of an institution, to ensure that all programs are well designed and deliver appropriate outcomes. On the other hand, the role of the faculty members is crucial and vital factor for the success of OBE. Teamwork, faculty involvement and faculty ownership are solicited from them. Therefore, faculty should be deeply engaged and supported from the onset in the leadership of any effort toward outcomes-based learning and in the institution's policy-making decision process.

Based on the aforementioned findings, it is suggested that the school administrator fully support faculty professional development like continuous participation in trainings and seminars on the updates of the OBE and processes such curriculum mapping and syllabus preparation. Assistance should be provided to all faculty members to learn all the aspects of the outcomes-based education, assessment processes and learner centeredness of instruction. Moreover, all Colleges of RMTU should also conduct relevant researches which can provide strong empirical data of OBE implementation, utilization and effectiveness as well as problems encountered.

The study is limited to appraisal of the essence of OBE and knowledge of implementation in one particular university of the Philippines. The study therefore is not generalizable to all higher education institution in the Philippines. The researcher suggests afollow-up study which may focus on the status and impact of the implementation and adoption of an outcomes-based approach in the university that would include the views, insights and experiences of the faculty, administrators/managers and other personnel.

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Outcome Based Education (OBE) - Trend Review

RashaEldeeb and NishaShatakumari
Department of Physiology, Gulf Medical University (GMU), Ajman, UAE.

Abstract: *The reform in the health services that stresses on professionalism had brought the necessity to adopt outcome based education (OBE) in medical education. It is an approach of education that clearly identifies its intended final product – students' competencies by determining the final curriculum outcome - a head of planning the framework of the curriculum. The unambiguous outcome is used to plan the curriculum, monitor its implementation, evaluate it and assess student's achievement. The present paper is review of the origin, advantages, disadvantages, pitfalls and guidelines in implementation of outcome-based education. It is an attempt to provide a comprehensive coverage of a very popular current trend in medical education.*
Key words: *outcome-based education, medical education trends, curriculum planning*

I. Introduction

With contrary to the fact that most teachers put the center of their attention too much on what they teach rather than on what their students learn, OBE emphasizes on what is expected from the student to finally achieve when they complete their courserather than how they achieved it.

Outcome based education is defined as an approach to education in which decisions about the curriculum are driven by the outcomes the students should display by the end of the course- professional knowledge, skills, abilities , values and attitudes- rather than on the educational process. It highlights the fact that you have to know the final destination of your journey before you start voyaging [1, 2]

II. Origin of the outcome based education (OBE)

OBE has been adopted for more than a century when educators brought to light the importance of appreciating students' individual variation in the learning process, believing that education is best measured by encouraging individual students' achievement that could occur at different rates for different students. OBE allows the students of different abilities to learn at their own rates with an emphasis on programmatic outcome in professional medical knowledge, skills and attitudes [3, 4].

The concept of OBE was also encouraged by the reform in the health care system that stresses on establishing a common set of standards for doctors with highlighting the fact that professionalism should be an essential competency achieved by the medical student before graduating [5]. With the increasingly global marketplace for higher education , OBE has been adopted by many medical schools with a great interest to ensure that the degrees granted to their students are competitive and accredited internationally and their graduate are competent practicing physicians [6,7].

III. Nature of the outcome based education (OBE)

Outcome-based education approaches the curriculum decision making based on the competencies students should demonstrate at the end of their educational program, thus the outcomes or competencies dictate the curriculum content and organization, the teaching methods and strategies, the course offered, the educational environment and the assessment strategies [8]. All curriculum and teaching decisions are made based on how best to facilitate the desired final outcome [9, 10]**.**

Steps for planning and implementing outcome based curriculum:

1. **Deciding on the outcomes:** the educational outcomes are clearly identified and unambiguously specified regarding the content, context and competence. The US Accreditation Council on Graduate Education [11],lumps the outcomes into a set of general competencies addressing patient care, medical knowledge, practice-based learning and improvement, system-based practice, interpersonal and communication skills and professionalism [12].
2. **Demonstrating outcomes:** the expected outcome should be defined by setting 'benchmarks' for each level of the program. Each benchmark is a skill that must be demonstrated by the student. Benchmarks should tackle and define specifically the goals of the curriculum and verify ways to assess whether students have reached these goals at that level of study.
3. **Deciding on contents and teaching strategies** OBE can be implemented as a 'Whole-class' models which aim to bring all learners in a classroom up to high levels of learning before proceeding further or by the

'Flexible' models which use flexible grouping, continuous progress, technological approaches and instructional management [9,10].

4. **Assessments in OBE:** OBE is driven by assessments that focus on well-defined learning outcomes and not by other factors such as what is taught, the duration taken by the student to achieve the outcomes or which path the students take to achieve their targets [13]. In OBE standard-referenced assessment could be used which is similar to criterion - referenced assessment but with clearer description of expected performance and since OBE requires ongoing feedback between the student and the lecturer, continuous assessments and student portfolios would be of a great help in assessing OBE[12].

IV. Advantages

The adoption of OBE is perceived as a valuable addition to the educational process believing that with its clear specified outcomes it encourages participation and collaboration from multiple disciplines and interest groups in planning and implementing the curricula which will foster learning in various areas of medical practice.

Educators believe that OBE does not only guaranty the clarity and assures the absence of controversy in curricula planning but also its relevance to the students' future practice. The clear, straightforward outcomes provided by OBE form a framework for decision – making and guidelines for assessment and program evaluation [2, 4].

The educators who support OBE in medical education believe that the presence of specific, unambiguous outcomes, enables OBE to promote more self-directed learning and allow students to have a meta-cognitive understanding of the educational program and their role in that process. It also encourages active discussion of those goals and the values they embrace.

V. Disadvantages

The shift to OBE has attracted lots of opposition. Opponents believed that, education should be an open ended and should not be constrained by outcomes and that education should be valued for its own sake, not because it leads to some outcome. They believe that defining education as a set of outcomes - decided in advance of teaching and learning - conflicts with the wonderful, unpredictable voyages of exploration that characterize learning through discovery and inquiry. They mistakenly assume that teaching will be inappropriately limited by this model. Moreover they are arguing and emphasizing on what they believe; that the inclusion and emphasis on attitudes and values in stated outcomes is inappropriate [4, 14]

Critics of OBE object to the use of standardized tests thinking that it is unfair to use the same level of work or to use the same achievement tests for impoverished or racially disadvantaged students as they do for more advantaged students. They also claim that the OBE approach does not permit special, lower standards for students who have been badly served by public education in the past.

Regarding the outcomes, many opponents dislike them because they think the outcomes' standards maybe too easy, too hard, or wrongly conceived. In addition, some critics object to additional resources being spent on the struggling students. Furthermore, some teachers find their grading workload significantly increases in OBE curriculum [14]

VI. Pitfalls in implementation

While implementing OBE we have to clear certain obstacle that we may face:

- The Unclear and ambiguous setting of certain outcomes either for the teacher, student or both hinder student achievement and teacher contribution in the curriculum.
- The teachers' unawareness of the curriculum's outcome will limit the collaboration and cooperation between the faculties to reach a common goal; creating a state of traditionalism and faculty resistance.
- The improper assessment tool that doesn't match the aimed outcome or that doesn't consider the variability in student's achievement.

VII. Guideline to implement OBE

For a successful of OBE program collaborative effort from administrators, educators, parent, teachers and students should be sought to assure a successful planning and implementation and to guarantee commitment and decrease resistance.

The basic characteristics and principles for OBE implementation would include:

- A clear institutional endorsed mission statement that reflects commitment to success for all the students and provides the means for translating that commitment into action.
- Clearly defined 'exit outcomes' that issued to articulate the curriculum framework of the program and that convey what students must demonstrate before they graduate.

- Engagement of large, complex and geographically dispersed faculty staff in an extended period of highly collaborative, cross-disciplinary dialogue, innovative thinking and planning to assure ownership and full commitment of the faculties.
- A system of instructional decision making and delivery that employs a variety of methods to assure successful demonstration of all outcomes and to provide more than one chance for students to be successful.
- Multiple instructional and assessment strategies that meet the needs of each student with allowing adequate time and assistance for each student to reach the maximum potential.
- A criterion-referenced system of assessment and an ongoing system of improvement programs that ensure staff accountability, effective leadership and staff collaboration with a data base of significant, visionary outcomes for all students, plus key indicators of institute effectiveness, that is used and updated regularly to improve conditions and practices affecting student and staff success [10,15].

VIII. In Conclusion

OBE is an educational approach considered in planning, implementing and evaluation of curricula rather than an event occurring in the curricula. It promises high level of learning for all students based on the achievement of clearly unambiguous outcomes with consideration to the appropriateness of each learner's development level and assuring active and experienced-based learning. It provides the learner with the destination of the educational journey before voyaging.

Conflict of interest: none

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An Outcome Based Education (OBE): An Overview

[I]Duradundi. Sawant. Badkar, [II]Dipak. N. Mudgal
[I]Dept. of Mechanical Engg, [II]Dept. of Civil Engg
[I,II]Shri Balasaheb Mane Shikshan Prasarak Mandal Ambap's, Ashokrao Mane Group of Institutions, Vathar Tarf Vadgaon, Dist: Kolhapur, Maharashtra State, India.

Abstract
Outcome-based education (OBE) means clearly focusing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. This paper presents the review the operating principles, beliefs, learning and features of outcome-based education, essentials of genuine outcome-based models, and how the effects of OBE on students and institute depends on which implementation approach is used. Major developments have been made with the move towards the outcome-based education (OBE) in technical education and learning outcomes are on today's agenda. Learning outcomes have been specified in a number of areas and frameworks or models for communicating and presenting learning outcomes have been described. OBE has, however, two requirements. The first is to make the learning outcomes explicit and the second is the use of the specified outcomes as a basis for decisions about the curriculum. It is the second requirement that is often ignored. This paper describes how learning outcomes are used in the development of an information systems curriculum.

Keywords
Outcome Based Education: principles of OBE: essentials of OBE.

I. Introduction

There is no one agreed version of outcomes-based education and different versions may show an outcomes-based influence in different ways. However, we can make a broad division between curriculum frameworks where outcomes based education has been mixed with an existing curriculum approach, and the more 'official' account of outcomes-based education that has been developed by William Spady and his colleagues. In the discussion below we will refer to the first, mixed, approach as "lowercase" outcomes-based education (OBE) and to Spady's account as "upper case" outcomes-based education (OBE). William G Spady said that "an Outcome-based Education (OBE) means focusing and organizing an institutes entire programs and instructional efforts around the clearly defined outcomes we want all students to demonstrate when they leave institute". This means starting with a clear picture of what is important for students to be able to do, then organizing curriculum, instruction, and assessment to make sure this learning ultimately happens. The keys to having an outcome-based system are:

1. Developing a clear set of learning outcomes around which all of the system's components can he focused.
2. Establishing the conditions and opportunities within the system that enable and encourage all students to achieve those essential outcomes.

William G Spady pointed out "an Outcome-based Education is NOT a program, a package, a technique, a fad, a quick-fix, a panacea, a miracle or an event. It is transformational way of doing business in education" [1]. As per kudlas J.M. "OBE is a process that focuses on what is to be learned - the outcomes" [2].

William G Spady et al. noted that "The basic tenets of OBE are shifting the focus of educational activity from teaching to learning; skills to thinking; content to process; and teacher instruction to student demonstration" [3]. As stated by Spady, W. D. "An outcome based education is a culminating demonstration of learning. It is a demonstration of learning that occurs at the end of a learning experience. An outcome is the result of learning which a visible and observable demonstration of three things is: knowledge, combined with competence, combined with orientations" [4]. According to James, "Education that is outcome-based is a learner-centered, results-oriented system founded on the belief that all individuals can learn" [5].

As said by William G. Spady and Kit J. Marshall, "Outcomes are clear, observable demonstrations of student learning that occur after a significant set of learning experiences. They are not values, attitudes, feelings, beliefs, activities, assignments, goals, scores, grades, or averages, as many people believe. Typically, these demonstrations, or performances, reflect three things:

(1) What the student knows;
(2) What the student can actually do with what he or she knows;
(3) The student's confidence and motivation in carrying out the demonstration. A well-defined outcome will have clearly

defined content or concepts and be demonstrated through a well-defined process beginning with a directive or request such as 'explain', 'organize', or 'produce'"[6].

Boschee F, Baron and M.A, revealed that "Outcomes are future oriented, publicly defined, learner-centered, focused on life skills and contexts; characterized by high expectations of and for all learners, and sources from which all other educational decisions flow". As per the statement given by Boschee F, Baron and M.A, "Learning is facilitated carefully toward achievement of the outcomes, characterized by its appropriateness to each learner's development level, and active and experienced-based"[7]. Stephen Adam summarized that outcomes are usually defined in terms of a mixture of knowledge, skills, abilities, attitudes and understanding that an individual will attain as a result of his or her successful engagement in a particular set of higher education experiences. Stephen Adam in his literature also mentioned that "Learning outcomes can provide a clear focus on what students achieve and lead to better qualifications and an improved student experience"[8].

Towers, James M. highlighted that to make the outcome-based system work, the following four points are necessary. First, what the student is to learn must be clearly identified. Second, the student's progress is based on demonstrated achievement. Third, multiple instructional and assessment strategies need to be available to meet the needs of each student. And finally, adequate time and assistance need to be provided so that each student can reach the maximum potential" [9].Tucker B. defined the process of OBE in such way that "Outcomes based education (OBE) is a process that involves

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the restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of high order learning and mastery rather than the accumulation of course credits" [10]. Suskie, L, assessed OBE as, "an expected learning outcome is a formal statement of what students are expected to learn in a course. Expected learning outcome statements refer to specific knowledge, practical skills, areas of professional development, attitudes, higher-order thinking skills etc. that faculty members expect students to learn, develop, or master during a course" [11]. In order to adapt to these challenges, universities worldwide are thinking about how to redesign their academic models. A recent US national panel report calls for a dramatic reorganization of undergraduate education to ensure that all college students receive not just access to college, but an education of lasting value. The report also recommends colleges help students become "intentional" life-long learners, and to create new assessments that require students to apply their learning to the real world [12].

It is stated clearly not what the lecturer is going to teach, but what the outcome of that teaching is intended to be and at what standard. We also need Assessment Tasks that tell us not how well students have received knowledge, but how well they can use it in academically and professionally appropriate ways such as solving problems, designing experiments and communicating with clients.

This paper presents the review the principles of outcomes-based education with an emphasis on beliefs and features and design principles and essentials.

II. Beliefs and Features of Outcome-Based Education (OBE)

Spady, W. D, in his book, "Outcomes Based Education: Critical Issues and Answers" highlighted the following seven Beliefs and Features of Outcome-based Education (OBE) [1].

1. All students can learn and succeed, but not on the same day in the same way.
2. Success breeds success.
3. Schools control the conditions of success.
4. It emphasizes authentic, achievable and assessable learning outcomes.
5. It is primarily concerned with what students' culminating capabilities at graduation time. It centers curriculum and assessment design around higher order exit outcomes.
6. It is accountable to the stakeholders, the learners, the teachers, the employers and the public.
7. It leads to the change of schooling, including the curriculum, instruction and assessment.

III. Operating Principles of OBE

William G Spady focused on the following four Operating Principles of OBE [1].

- Clarity of focus, meaning that all activities (teaching, assessment, etc) are geared towards what we want students to demonstrate;
- Expanded opportunity, meaning expanding the ways and numbers of times kids get a chance to learn and demonstrate a particular outcome;
- High expectations, meaning getting rid of the bell-curve and all students should achieve at the highest level;
- Design down, meaning designing the curriculum from the point at which you want students to end up.

IV. Learning Outcomes [Washington Accord-Graduate Profiles

Knowledge and skills for the 21stcentury are mentioned below [13].

1. Academic Education

Completion of an accredited programme of study typified by four years or more of post-secondary study

2. Knowledge of Engineering Sciences

Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the conceptualization of engineering models

3. Design/development of solutions

Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and an d safety, cultural, societal and environmental considerations.

4. Investigation

Conduct investigations of complex problems including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

5. Modern Tool Usage

Create, select and apply appropriate techniques, resource, and modern engineering tools including prediction engineering tools including prediction and modeling, to complex engineering activities with an understanding of the activities, with an understanding of the limitations.

6. Individual and Team work

Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings and in multi-disciplinary settings

7. Communication

Communicate effectively on complex engineering activities with the engineering community and with society at large, such being able to comprehend and write effective reports and design documentation make effective presentations, and give and receive clear.

8. The Engineer and Society

Demonstrate understanding instructions of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering practice.

9. Ethics

Understand and commit to professional ethics and responsibilities and norms ethics and responsibilities and norms of engineering practice.

10. Environment and Sustainability

Understand the impact of engineering solutions in a community context and demonstrate knowledge of and need for sustainable development.

11. Project Management and Finance

Demonstrate acknowledge and understanding of management and business practices, such as risk and change management, and understand change management, and understand their limitations.

12. Life Long Learning

Recognize the need for, and have the ability to engage in independent and life-long learning.

V. The Essentials of OBE

- In OBE, what matters ultimately is not what is taught, but what is learned;
- Teachers must set appropriate course intended learning

outcomes, instead of teaching objectives;
- Constructive alignment: What we teach, how we teach and how we assess ought to be aligned with the intended learning outcomes, such that they are fully consistent with each other;
- The quality of teaching is to be judged by the quality of learning that takes place;
- All OBE approaches take a criterion-based view of assessment and focus on what students can do with knowledge after a period of learning.

VI. Current Practice And Critical Issues For Engineering Education

In recent years studies have been conducted in many countries to determine the technical and personal abilities required of engineers by today's industry [14]-15]. These studies have indicated some key concerns. Today's engineering graduates need to have strong communication and teamwork skills, but they don't. They need to have a broader perspective of the issues that concern their profession such as social, environmental and economic issues, but they haven't. Finally, they are graduating with good knowledge of fundamental engineering science and computer literacy, but they don't know how to apply that in practice. These studies have informed reviews of engineering education conducted in several countries [16]-17] and have had a major influence on the revision of national accreditation criteria for engineering programs in countries such as the USA [18], UK [19] and Australia [20]. The new accreditation approach shifts emphasis away from "what is being taught" to "what is being learned" [21]. Engineering programs are now required to demonstrate that their graduates are achieving a set of specified learning outcomes, and the means of demonstrating this is left to each university to decide and implement. There are also some requirements in each country for increased management education, design education and industry relevance of programs. If the industry studies, accreditation criteria and reviews of engineering education are examined it is clear that the profession, the industry employers and the students themselves are calling for significant changes to the current philosophy and delivery of engineering education. What are the critical issues that need to be addressed? These can be summarized as follows:

1. Engineering curricula are too focussed on engineering science and technical courses without providing sufficient integration of these topics or relating them to industrial practice. Programs are content driven.
2. Current programs do not provide sufficient design experiences to students.
3. Graduates still lack communication skills and teamwork experience and programs need to incorporate more opportunities for students to develop these.
4. Programs need to develop more awareness amongst students of the social, environmental, economic and legal issues that are part of the reality of modern engineering practice.
5. Existing faculty lack practical experience, hence are not able to adequately relate theory to practice or provide design experiences. Present promotion systems reward research activities and not practical experience or teaching expertise.
6. The existing teaching and learning strategies or culture in engineering programs is outdated and needs to become more student-centred.

Modern Approach to Curriculum Design

- Select course objectives which promote higher order thinking skills such as Analysis, Synthesis, Evaluation and Creativity
- Express the objectives as knowledge, skills and attitudes which the students should be able to demonstrate on successful completion of the course, using measurable Action Verbs.
- Take advantage of ICT tools to make these available to everyone concerned well in advance.

Tomorrow's World of Education Outcome-based Learning

At the end of a four year program of study, graduates need to demonstrate the mastery of not only a well chosen set of domains specific learning objectives, but also a set of domain independent but also a set of domain independent learning outcomes. It is challenging that how to ensure mastery over not only the domain knowledge but only the domain knowledge but also over knowledge, skills and attitudes needed for the 21st century. The leading teaching pedagogy for engineering education still remains "chalk and talk", despite the large body of education research that demonstrates its ineffectiveness. In recent years, the engineering profession and the bodies responsible for accrediting engineering programs have called for change in academic excellence in technical education.

VII. Conclusion

The key benefit of this approach is that we can actually see what students have learned and adapt our pedagogical approach in response to this valuable feedback. The OBE accreditation process is one of assurance and building of trust and once this position has been established then all parties can work cooperatively to further the quality of engineering education for students and society. Outcome-based systems are built around outcomes and flexibly use time and other critical resources to accomplish those outcomes for all students. Outcomes are clear demonstrations of learning not values, attitudes, internal mental processes, or psychological states of mind. It is too early to assert the effectiveness of this newly adopted academic model. The challenges that face the faculty members are numerous; some issues that need to be addressed are how to effectively integrate learning outcomes in courses, how to assess students in a way that will contribute to their learning experiences and how to shift the focus from input/lecturing to feedback/learning.

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Outcome Based Education (OBE) Curriculum Assessment for Industrial Training Program: Based on Students' Perception

Outcome Based Education (OBE) Curriculum Assessment for Industrial Training Program: Based on Students' Perception

SITI AMINAH OSMAN, MOHD ZAIDI OMAR,
KAMARUZAMAN MAT, NORHISHAM TAN KOFLI,
MOHD NIZAM AB. RAHMAN, ZUHAIRUSSE M.DARUS
Faculty of Engineering and Built Environment
Universiti Kebangsaan Malaysia
43600, UKM Bangi, Selangor
MALAYSIA
*e-mail: saminah@vlsi.eng.ukm.my web: http://www.ukm.my

Abstract: - The implementation of outcome-based education (OBE) curriculum in the university syllabus nowadays plays an important role in producing quality graduates students. Assurance to the effectiveness of OBE, a steady and continuous assessment must be carried out through each course as well as the industrial training program. This paper discussed the perceptions of the undergraduate students from Civil and Structural Engineering Department who have undergone their industrial training program. Questionnaires were prepared and summarized into three main aspects i.e. 'personal attitude', 'communication' and 'work attitude' of the students before and after the training program. The results show that the overall student's performance before the training averaging from 48% to 63% for these three main aspects. Interestingly the percentage has tremendously increased to 89% - 95% after completion of the training program. This proved that the OBE implementation in university syllabus is beneficial for improvement to the engineering education and engineering profession in general.

Key-Words: - Industrial training, program outcomes (PO), course outcomes (CO), attitude, work attitude, communication.

1 Introduction

The increasing numbers of development in infrastructure and building projects throughout Malaysia nowadays has made the university constantly produce graduate students every year. This is in line with the Malaysia visions to become a fully developed country by year 2020. For this aspiration to be realized, Malaysia expects to have approximately 200,000 of engineers to serve and develop the country (Mustafa et al., 2008). Excellent qualification, dedicated, responsible and well trained are amongst the key factor to become successful engineers. Furthermore, most of the companies nowadays are expected to hire graduates with skills, quality and market ready. Thus automatically their operating cost can be greatly reduced. As to fulfil those criteria specified by the companies, the industrial training program is being made a compulsory course for every student in the faculty. By having this industrial training, students are exposed to the responsibility of an engineer and the engineering profession, communication skills that include daily interaction within the real working environment and as well as technical writing. Furthermore, the needs to include the industrial training as part of the university curricula are also under requirements of Board of Engineers Malaysia (BEM) through Malaysian Engineering Accreditation Council (EAC, 2006).

Apart of that, starting from 2004 all the engineering programs in Malaysia have been instructed to adopt OBE based curriculum by the EAC as a part of the requirement for BEM to be a full member of the Washington Accord (WA). This is to ensure that the engineering degree produced by the Malaysian Universities would be recognized by the fellow WA member, such as United States, United Kingdom, Australia, South Africa, and etc (Shahrir et al. 2008). The implementations of OBE curriculum in all engineering courses, which also include industrial training, have given a positive implication for the graduates. Most of the existing courses have been reviewed and modified as well as the industrial training courses where the companies' requirement and input have been taken into consideration. As a result, every program that runs in the faculty or department have its own outcomes whilst, every course that offered in the department

also needs to have its own outcomes. At the moment there are twelve program outcomes (PO) have been formulated for each course and the list of POs are as follows:

PO1 – Ability to acquire and apply knowledge of basic science and engineering fundamentals,
PO2 – Ability to communicate effectively, not only with engineers but also with the community at large,
PO3 – Having in-depth technical competence in a specific engineering discipline,
PO4 – Ability to undertake problem identification, formulation and solution,
PO5 – Ability to utilise a systems approach to design and evaluate operational performance,
PO6 – Ability to function effectively as an individual and in a group with the capacity to be a leader or manager as well as an effective team member,
PO7 – Having the understanding of the social, cultural, global and environmental responsibilities and ethics of a professional engineer and the need for sustainable development,
PO8 – Recognising the need to undertake lifelong learning, and possessing/acquiring the capacity to do so,
PO9 – Ability to design and conduct experiments, as well as to analyse and interpret data,
PO10 – Ability to function on multi-disciplinary teams,
PO11 – Having the knowledge of contemporary issues,
PO12 – Ability to use the techniques, skills, and engineering tools necessary for engineering practice.

For the industrial training program/course, six course outcomes (CO) have been designed as follows:

CO1 – Expose student to work, responsibility of an engineer and the ethics of engineer
CO2 – Ability to communicate effectively within the working environment
CO3 – Expose students to general and specific procedure of engineering field which related to industry
CO4 – Expose student to engineering practice which is specific to his/her specialization
CO5 – Ability to prepare technical report for the industrial training
CO6 – Ability to use the theoretical knowledge for solving the industry problem

All of six COs need to be mapped with the 12 POs as shown in Table 1 according to the Undergraduates Studies Guidelines Session of Engineering Faculty (2007-2008). Based on that table only PO2, PO6 and PO7 were identified to be fully measured and marked as 3 (PO with fully measurement) and the rest of others POs were marked as 2 (PO with partial measurement) and 1 (PO with no measurement) in this industrial training program.

Table 1 Mapping of course outcomes (CO) with programme outcomes (PO)

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1							3			2	2	
CO2		3		1		3						
CO3						1	1			1		
CO4						1			1	2	2	
CO5		3							2			
CO6	2			1	1		1		2			

1 - PO with no measurement
2 - PO with partial measurement
3 - PO with fully measurement

These POs (PO2, PO6, and PO7) need to be measured in order to assess the effectiveness of OBE curriculum as well as the benefits of industrial training to the students. For the purpose of these measurements and assessments, a series of questionnaires have been prepared to suit with the three POs. These questionnaires were carried out to all civil engineering students in order to assess and compare their performance before and after the industrial training program. All 17 questionnaires were prepared and classified to 3 main aspects namely personal attitude, communication and work attitude. These 3 main aspects will be used to measure the 3POs where 'personal attitude' represents PO7, communication for PO2 and work attitude is for PO6. Hence, this paper will discuss on the three main aspects that contribute to the program outcomes for students in Civil and Structural Engineering Department based on their perceptions. In addition, these results also proved that students have gained benefits in terms of providing and upgrading their skills.

2 Research Methodology

Every year students in the Department of Civil & Structural Engineering from the Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia (UKM) must undergo their industrial training program for at least 2 months. Normally the industrial training program will be carried out in the third semester for third year students who have successfully completed their six semester studies.

In 2008, a total of 105 civil engineering students have had their training program from 5th Mei 2008 to 4th July 2008 (Omar et al., 2008). 17 questions were asked and evaluated based on 1-5 Likert scale. This Likert scale was used to measure the extent and represent the perception of student's views (Likert, 1967). The choice of Likert scale were ranging from not satisfactory at all given as 1, not satisfactory as 2, neutral as 3, satisfactory as 4 and most satisfactory is given as 5. All questionnaires were prepared to meet the outcomes target and simultaneously can be used to investigate the students evaluation on the industrial training program which were includes of:

a) Students profile
b) Place of industrial training
c) Students perception before undergo the industrial training programme
d) Students perception after undergo the industrial training programme
e) Students perception on the benefits of industrial training programme and
f) Placement method for the industrial training programme through online application

The questionnaires were given to the students once they have completed the industrial training program.

3 Results and Discussion

Results from the questionnaires are discussed and divided accordingly as follow.

3.1 Student's Profile

The total numbers of 105 students in the third year of Civil and Structural Engineering Department can be divided to 34% (36 person) of female and 66% (69 person) of male as shown in Figure 1 (Osman et al., 2008). Percentage of the students was Malay (50%), Chinese (40%), Indian (1%) and others (9%). The students' entry level to UKM can be divided into 4 sources where 50% of them came from Matriculation colleges, 37% from Malaysian Certification Higher School holder (or STPM), 10% were from diploma holders with any university and 3% were from others qualification. Figure 2 shows the distribution of students' percentage entry level to the department.

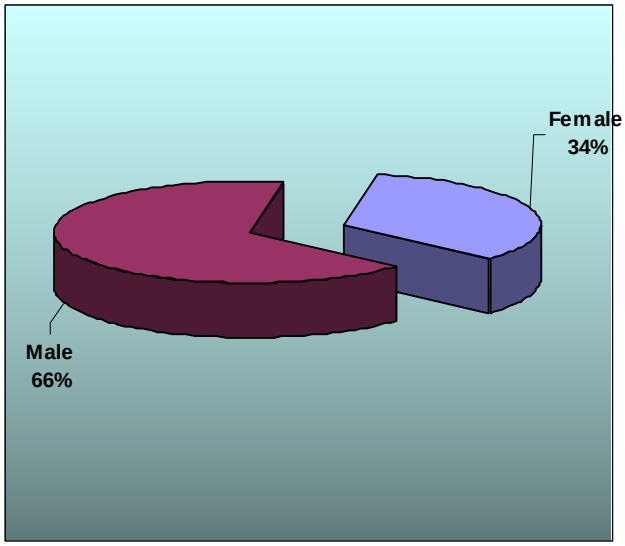

Fig. 1 Students percentage by gender

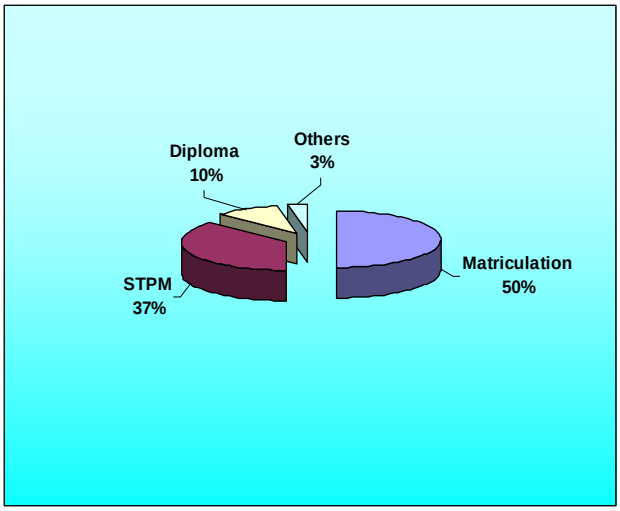

Fig. 2 Students percentage by entry level

3.2 Place of Industrial Training

Each year students from the department will have their training placement throughout Malaysia; however their placement (56%) were mostly concentrated in the urban area and in a town centre such as Kuala Lumpur. Table 2 shows the percentage of students' placement in various companies that available in Malaysia. As expected

most of the civil engineering students were interested to have their placement in Properties and Construction sector (37%) and followed by the Consultancy sector (34%). Normally female students were likening to have their industrial training placement in consultant design office whilst for male students they always preferred to be placed in construction sector.

In the aspect of specialization and scope of work for the companies as shown in Table 3, majority of the students (44%) were having their training in companies that involved in civil and structural engineering work and civil and environment work (21%). Some of them were also involved in mechanical (8%) and electrical engineering (8%) companies. Placements of students in the right companies which involve in the same field such as civil and structural would benefits the students, otherwise students may end up their training program without any knowledge and experience if they were placed in the unsuitable companies. Even though students were given full opportunity to choose the companies, but faculty did always monitored the suitability and capability of the companies in providing the training program.

Table 2 Students placement in various Companies

A . Types of Companies	**Percentage (%)**
Manufacturing Sector	2
Properties & Construction Development	37
Transportation	7
Agriculture & Food	1
Material Engineering	1
Energy & Natural Resources	2
Built Environment Sector	8
Consultancy	34
Others	9

Table 3 Students percentage according to Companies specialization

Companies specialization	**Percentage (%)**
Mechanical	8
Manufacturing	3
Civil and structural	44
Civil and environment	21
Biochemical	1
Microelectronics	2
Electrical	8
Communications	4
Computer	2
Architectural	5
Others	3

Based on Malaysia Small Medium Industries Development (SMIDEC) definition, the available companies in civil engineering sector can be classified into three types of sizes; large company with numbers of employees more than 250, medium size company with employees around 100 to 250 and small size company with the employees below 100 (SMIDEC, 2007). Figure 3 shows the highest percentages (47%) of the students were having their placement training in small size company whilst the lowest percentages with 23% of the students were placed in medium size company. From these data it proved that majority companies involved in civil engineering sector were from consultant office and small contractor. Even though these companies were considered small but their capabilities in providing more opportunities, training coverage, management skills were much better when compared with large companies (Connor and Shaw, 2008).

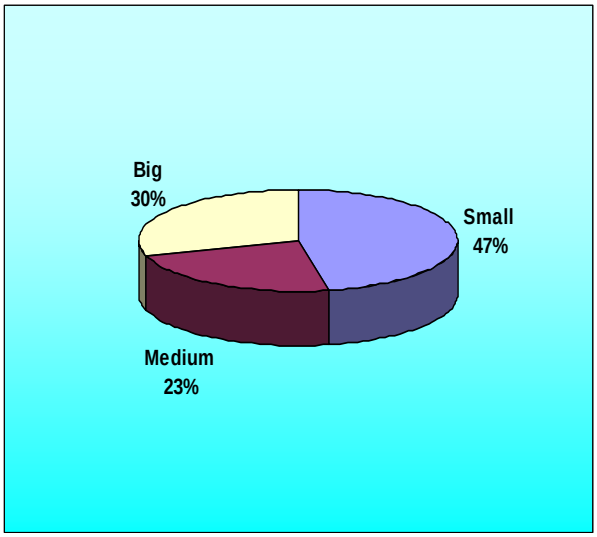

Fig. 3 Percentage of students' placement in company

3.3 Students' Perception before Industrial Training

As mentioned before all the 17 questionnaires can be classified into three main aspects and were prepared by considering the POs and COs as shown in Table 3 (Osman et al. 2008). These aspects were assessing the students' perception before the industrial training. Based on these questionnaires (as shown in Figure 4), 66% of the students agreed that they have good personal attitude (PO7) and 63% of them have an ability to perform good work attitude (PO6) before the training. This indicates that even before the training starts the students are confidence on their ability to posses' good attitude and in delivering good works as an trainee engineer. The confidence level of the students may be achieved because of the OBE curriculum where students have been exposed to ethic of engineering courses and they also involved with the real design project during their studies. For example in structural design course of steel and reinforced concrete, the application of real project is much important in order for the students to have real picture of the design concept. So their preparation in completing the design project which involves drawing, calculation, simulation and written report has prepared them prior having their training. However for the communication aspect (PO2), only 48% of the students are confidence in their communication skills and the rest have problem with communication. Even though students have been exposed to do presentation since in the 1st year of their studies but their confidence level in communication skills is still low.

Table 3 Questionnaires classification

Aspects	**Questionnaires**
Personal Attitude	Good self esteem
	Good self & time management
	Self confidence
	Punctuality
	Curiosity
	Presentable self appearance
Communication	Oral presentation skills
	Written communication
	Interaction skills
Work attitude	Ability to work independently
	Adaptable with environment
	Teamwork
	Ability to work under pressure
	Leadership
	Problem solving skills
	Subject knowledge

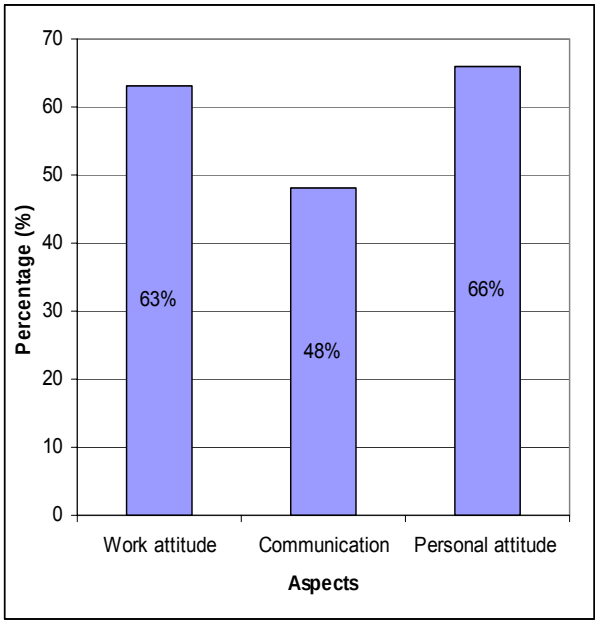

Fig. 4 Students' perception before industrial training

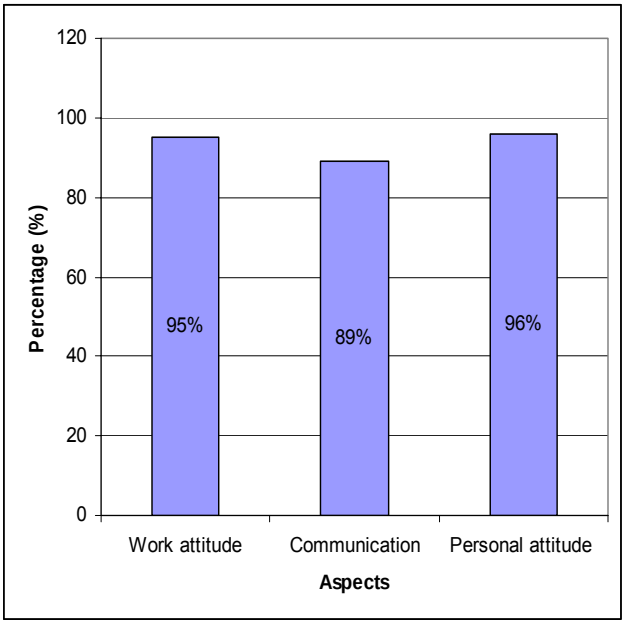

Fig. 5 Students' perception after industrial training

3.4 Students' Perception after Industrial Training

After completed the industrial training, the students' perception were also evaluated from the three aspects mentioned earlier. The percentage of three main aspects has now improved as shown in Figure 5 of which work attitude (PO6) and personal attitude (PO7) had increased up to 95% and 96%. The increment around 30% to 32% of these two aspects showed that the exposure to the industrial training had made the students improved their personal attitude and work attitude. It also means that the students can adapt themselves with the working environment and had gain confidence in delivering their works.

In communication aspect (PO2), the percentage has now increased up to 89% as shown in Figure 5. Most of the students agreed that after having their industrial training, they are more confident to express their work verbally and in writing skills. Interaction with office colleagues at all levels had also improved their daily communication and this has been proven by the increment of 41% compared with that of before the industrial training. This finding is in line with the study of Connor & Shaw (2008), which stressed that communication skills can be improved through industrial training experience.

As listed in Table 3, every aspects of work attitude, communication and personal attitude that been assessed have its own criteria. These criteria were prepared according to POs and COs and the students need to answer questionnaires based on their perceptions according to the Likert scale. From the answers gathered, POs of these three aspects can be fully measured and simultaneously the achievement of these course outcomes such as CO1, CO2 and CO5 can be determined. These measurements are important to be carried out yearly in order to monitor the effectiveness of OBE and also for continual review of the program.

The improvements in these three aspects (PO2, PO6 and PO7) have shown that the students are capable to be a good trainee engineer and through this program students can also be trained to become a responsible and good professional civil engineer. This aspect is very important as mentioned by Harris et al. (2005), where as an engineer they are responsible to the human safety, health and people welfare.

The comparison of details criteria for the three aspects before and after the industrial training is shown in Figure 6 – Figure 8. These criteria represent the same questionnaires that have been prepared as in Table 3. Figure 6 shows the comparison of personal attitude (PO7) before and after the industrial training for each criterion. Whilst for communication aspect (PO2), the comparison before and after the industrial training is shown in

Figure 7 and for work attitude aspect (PO6) is presented in Figure 8. Obviously every criterion of these three aspects (POs) have shown an increment and this proved that both students and companies were benefited from this training in terms of experience, load works and etc (Oyebisi et al., 1996).

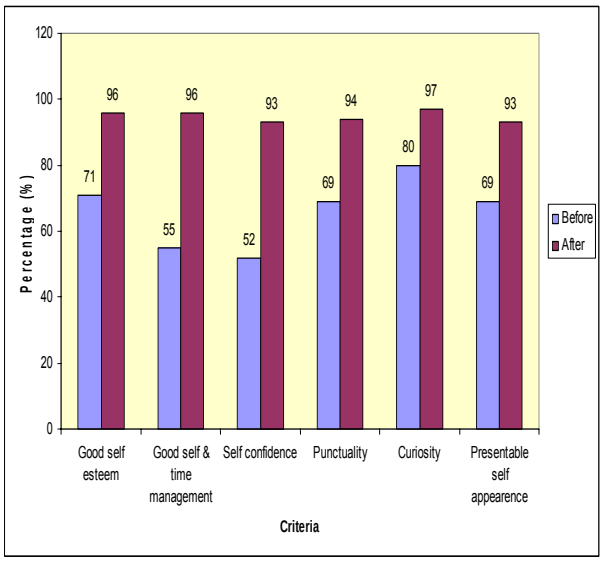

Fig. 6 Comparison of students' perception before and after undergoing industrial training based on criteria of 'personal attitude'

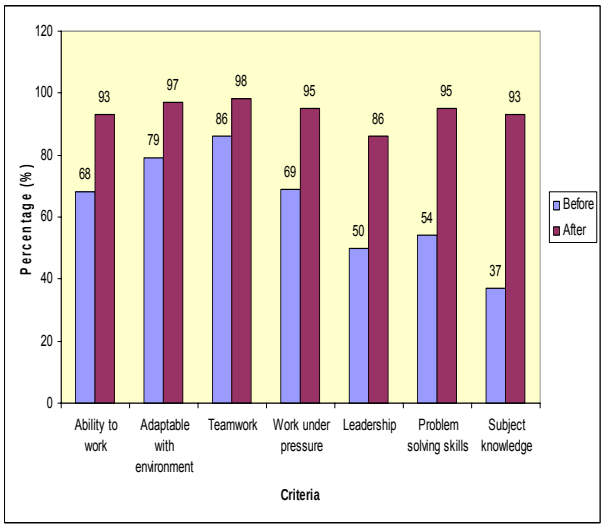

Fig. 7 Comparison of students' perception before and after undergoing industrial training based on criteria of 'communication'

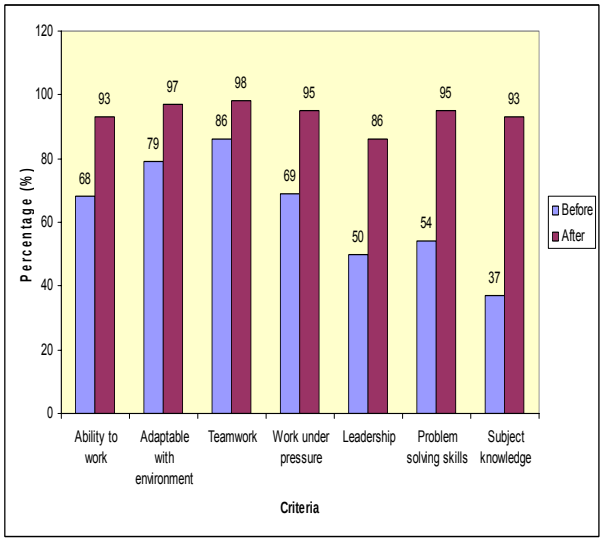

Fig. 8 Comparison of students' perception before and after undergoing industrial training based on criteria of 'work attitude'

3.5 Students' Perception on the Benefits of Industrial Training

Besides of these three aspects (PO7, Po2 and PO6), the questionnaires were also prepared to collect students' perception on the benefits of industrial training. As a result, from Figure 9 most of them (94%) agreed that the industrial training can increased their job prospect and 92% feel that it also provides more confidence in terms of job qualification. Whilst, 97% of them agreed that by doing the industrial training can provide more knowledge and guidance in choosing the job after graduated.

With high percentage for all aspects which almost 92% and above it is also proved that most of the students are satisfied with the industrial training and it is significant in helping them to plan for their future prospect and career. In addition by doing the industrial training, students can relate the fundamental theory that they have learnt in the university. Even though the students are now have been exposed to the OBE curriculum, but to apply the fundamental theory learnt in the university during industrial training may produce better trainee engineers and simultaneously students are well prepared when entering the workforce. According to Fallows and Steven (2000), fresh graduate students are immediately required to perform well with sufficient knowledge and background by the employer hence, by having the industrial training it is one of the options to equip them with such

experiences. Furthermore by having the industrial training program students will be more aware on the scope of works as a civil engineer and interestingly they will gain more knowledge especially the specialisation field in civil engineering profession. Some of the students may also have their ideas to choose and proceed their interest to work and prepare for their final year dissertation (thesis) based on what they have learnt during the industrial training program.

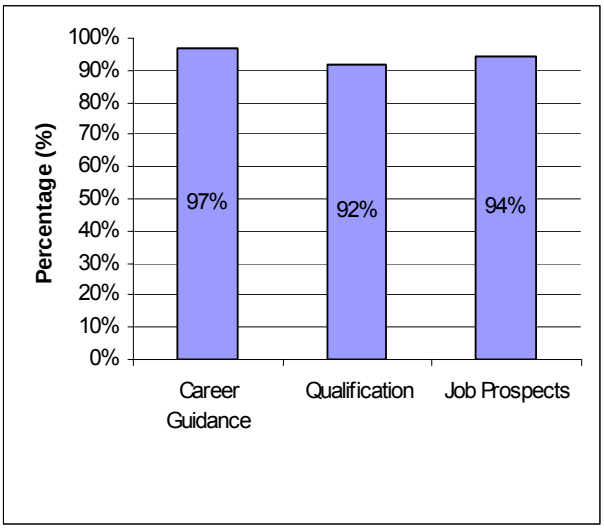

Fig. 9 Students' perception on the benefits of industrial training

3.6 Method of Placement for Industrial Training

Beginning from 2008, a new application method for industrial training which is known as SMPLAI has been introduced to all students in the Engineering Faculty. Students are compulsory to use the SMPLAI method. By using this SMPLAI method via online system, students can minimize their time and cost for the placement process. Furthermore through this process, the students' application letter can be monitored and well prepared by the faculty management. From the questionnaires results as shown in Figure 10, 80% of the students were successfully obtained their industrial training placement through this process and only 20% managed to get their placements using the other method. Those 20% who managed to get their placement may have sent their application letter, email or phoned directly to the companies which are not listed in the SMPLAI database.

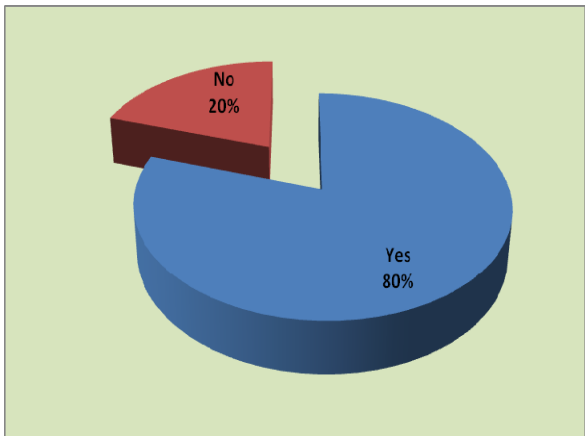

Fig. 10 Percentage of students' placement through SMPLAI

Students were also asked about their perceptions towards the SMPLAI method according to five aspects such as the application procedure and duration, the availability of the companies' data, informative and user friendly. Figure 11 shows that 45% of the students agreed that the SMPLAI method is informative in helping and providing the place. Students can save their time for searching the companies' availability and on top of that they can choose the companies which are nearest to their home town. From time to time the company profiles are always updated and the numbers of companies listed in the SMPLAI is also increasing. Meanwhile 72% of the students found that the SMPLAI method is user friendly and it shows that all the procedure and instruction in the method is properly arranged and easily to understand.

In terms of the application procedure and time that have been allocated for them in choosing the preferred place, only 62% and 65% of them were satisfied. The rest feel that they should have been given more time to choose their training places but for the faculty management the scheduled time table is important in order to ensure the application form can be processed in time. Delaying in processing the form would affect the students' preparation for the final examination as the industrial training program will start immediately after the exams. Only 38% of them have stated that the companies' data were sufficient in the SMPLAI. At the moment there are almost 2,000 numbers of companies' data that are available in the system and most of these companies are specialised in engineering fields of civil, mechanical, chemical and electrical. Based on these perceptions and feedbacks from the students, it shows that the SMPLAI method needs to be

improved in various aspects such as enhancing the method with complete and latest companies' database as to ensure the application process can be run smoothly. In addition, the system must also be updated with latest announcement with regards to the students' application status.

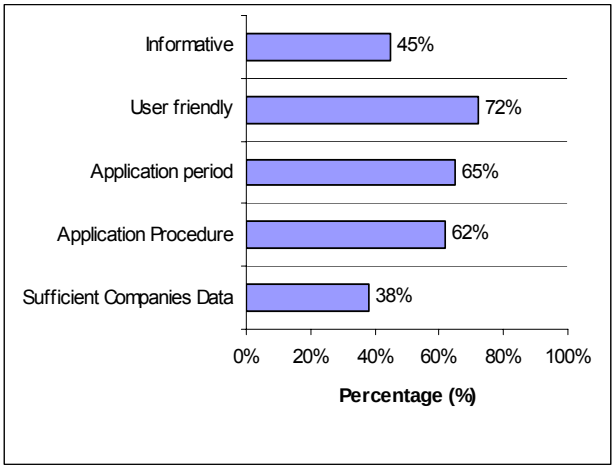

Fig.11 Students' perception towards SMPLAI

4 Conclusion

In conclusion, the purposes of this study have been achieved as all the students' perception data based on the three aspects (PO2, PO6 and PO7) were successfully obtained and assessed. From these data it shows that the percentage of personal attitude (PO7), communication (PO2) and work attitude (PO6) has significantly increased around 30% to 41% after they have completed the industrial training program. With these data it can also confirmed that the three COs from six COs that have been targeted (refer to Table 1) for this program were fully measured. These measurements show that the targeted CO is achievable and the effectiveness of OBE implementation through the training program can be evaluated.

Based on the POs and COs measurements, a continual improvement can also be carried out to enhance and strategize for a better industrial training program. A good cooperation and commitment from the companies in providing places for industrial training would also help the university to achieve the COs and POs. However, there are still rooms for improvement and review for the new SMPLAI method for students' placement. The feedbacks from the students were also proved that by undergoing the industrial training would give them opportunity to learn and experience the real world of working environment. Apart from that, with latest technology, knowledge and experiences that they have gathered during the training can also be used as an advantage for their future job prospects and guidance.

5 Acknowledgement

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