

# A Research on the Talents' Training Program of Universities with OBE

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**Abstract:** Talents' training program is the fundamental principle or a "law" for higher educational institutions. Outcome-based education(OBE), a student-centered and designed backwards educational idea, should run through the whole process of talents' cultivating program because it can describe and show the very specific and clear objectives, requirements and assessments which can improve the quality of higher education. In our paper, training objectives should follow three aspects, science direction, social demands and students' needs; OBE curriculum revision is the starting and key point of the program's reform; while the evaluation on the validity and quality of the OBE practice is the evidence for future development of talents' training program founded by OBE.

**Keywords:** Outcome-based Education (OBE), Talents' Training Program, Cultivating Objectives, OBE Course Reform

## 1. Introduction

Talents' cultivating program of universities, which can basically reflect the requirements and process of professional talents training, is an arrangement and management of teaching and its activities, more important, also a "law" of undergraduate education [1, 2]. The program generally includes cultivating objectives, requirements for graduation and curriculum systems covering main subjects, primary courses and practice training. Unfortunately those programs' structure or description of most universities in China is similar to Baguwen (Stereotyped Writing). In addition, the training objectives of different professional domains are formed indefinitely but have strong similarities. Hence, it is more likely to result in objectives' confusion, losing tight relationship between course goals and

requirements for graduation, unqualified teaching documents and materials, low level of teaching activities or arrangements.

Outcome-based Education (OBE) provided in 1990s by Spady and widely accepted by many countries particularly in some developed areas, America and UK, is a current initiative and mainstream in universities. OBE is just student-centered, which constructs expected learning outcomes of students through "design backwards" and arrange all kinds of teaching-learning activities directed by these achievements [3]. It highlights the design and aims of teaching should orientate the final learning outcomes after educated process [4, 5]. Therefore, implementing the reform of talents' cultivating programs with OBE can make its objectives, requirements and teaching activities more explicit and instructive, hence greatly prompt the quality and finally achieve the goals of higher education.

## 2. The General Relationship between OBE and Talents' training Program

The reform of talents' training program in universities with OBE should make this educational concept, OBE, run through the whole process of the program. In other word, all parts of this program, cultivating objectives, requirements of graduation and teachings activities should be correctly established and described with OBE. It needs to clarify firstly the training aims of professions of higher education institutions which are general educational directions for the talents of universities, then these aims can be promised to decompose into different and specific tasks, indexes of abilities achieved after educated process, moreover these requirements are able to be measured and evaluated with real materials and analysis method, as well as effectively suppose the formation for those general objectives successfully. It is worth noting that OBE is student-centered, so

students' participation in setting talents' training program, especially in the process of teaching-learning activities should be focused and considered.

### **2.1 Cultivating Principles of Objectives in Talents' training Program.**

What reasonable principles should the cultivating objectives in talents' training program follow persistently for higher education? This is the first fundamental determination in whole design of the training program. From our perspectives on the goal according to the roles and responsibilities of higher education, it similarly should be based on three important aspects below, science direction, social demands and students' needs.

(1) Science direction highlights the very important goal which higher education pursue permanently for the development of human beings, the able talents possessing scientific exploration spirit and powerful innovation capability are driving force for social development and technological progress. Talents of this kind are valued all over the world. While how much to master theoretical and specialized knowledge are the foundation for defining these talents from others. (2) Social demands emphasize the significance of practical abilities and skills for graduates. Cultivating the talents satisfied with social demand is a bounden responsibility of Higher education. This requires higher educational institutions to pay much attention to job needs in the society. Colleges and universities should establish close ties with society, government, enterprises and organizations, and hold more practical teaching-learning activities to prompt college students to master some certain social skills. Students are able to get into work and adapt to social requirements quickly after their graduation. Effective cultivation for graduates on practical ability can assist to release the pressure of social unemployment. The problem of unemployment is a very concerned macroeconomic issue in real economy development whether for developed or developing countries. It relates to social stability and economic growth. Creating and matching job needs are duties of government and higher educational institutions. (3) Students needs exhibits a focus on young generation's interests and differential demands

which they eagerly hope and expect to achieve in their campus life. Students needs are not everyone's interest but some representative ideas and needs according to the due development of college students and characteristic education of universities. Rapid technological blossom has brought greater personal differentiation and more students sincerely anticipate their own demands can be paid attention and satisfied. Higher educational institutions are not copy machines and they should cultivate young talents with differentiation, of course, it is also a more significant aim for higher education.

### **2.2 The Requirements of Graduation**

OBE needs to construct some very specific indicators of students achievements which can be observed and measured through decomposing those objectives for the setting of graduated requirements. It is a complicated issue in working out the whole program. Not like a OBE course reform, it does not look so hard to design specific requirements and indicators which can be observed and measured. The training professional program covers a number of courses, specific and comprehensive tasks are not easy to construct concisely, that is the cause of why there is a few theoretical and empirical academic studies related to the requirements for graduation in talents' training program till now.

### **2.3 Teaching-learning Activities and Evaluation**

Course teaching-learning is the core of the entire education process on campus and a main channel connecting the activities related to teacher and students. Application of OBE in course design is the most directed and wide using of this educational idea. To be specific, teaching documents should be revised or improved based on the requirements of OBE, and teaching-learning arrangements are supposed to match with these course materials. More importantly, the effects of OBE implement should stand the practical statistic test with scientific methods or tools which means it needs evaluation to provide evidence for clarify the validity and reliability of OBE practice. Figure. 1 describe the basic talents' training framework of universities under the direction of OBE provided in our paper.

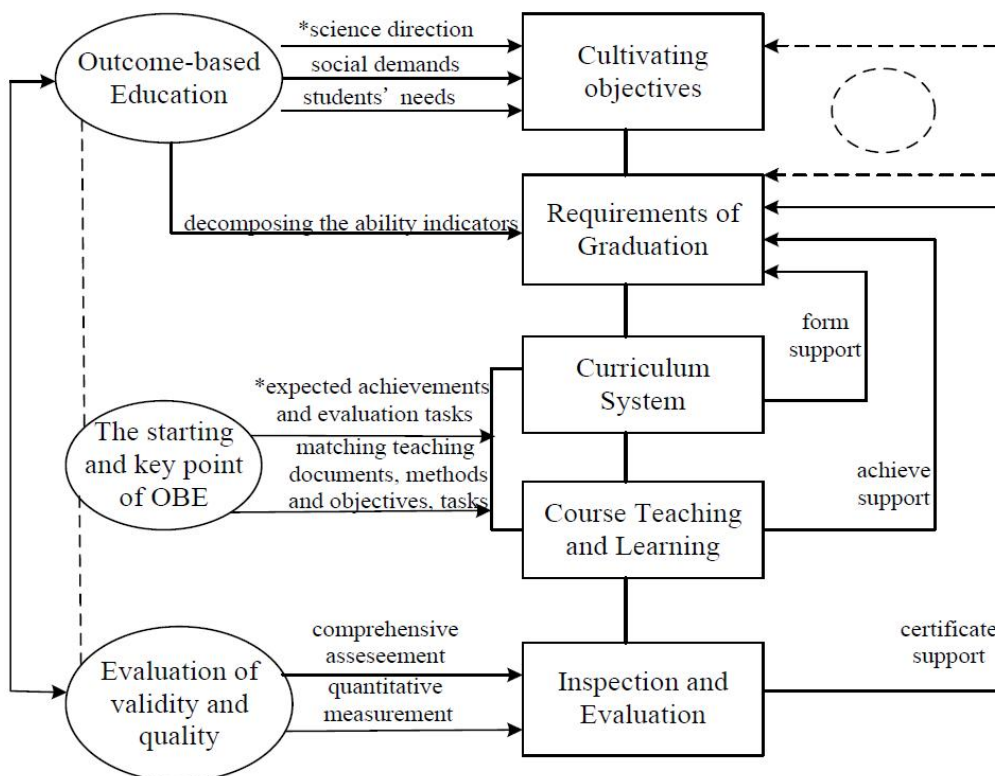


Figure 1. Basic Framework of Talents' Training System under OBE

### 3. A Starting and Key Point—OBE Curriculum Reform

Although OBE had better run through the whole talents' training project of higher educational institutions, it might be a very long, complicated process and needs more researches and practices. Mentioned above in this article, there is a few relative theoretical and empirical studies about the relationship between OBE and talents' cultivating program of universities in the word currently, especially few within Chinese education. Under such unfavorable conditions, a very significant part in the reform of program related to curriculum inspires what we should start and focus in initial stage. OBE curriculum reform have a very strong manipuility for the application of OBE, teaching documents, teaching activities and course tasks or assessments can be constructed quite precisely, lecturers and students are more likely to set the teaching-leaning plans mutually because both of them are very clearly aware of these achievements, examines and requirements and hence further arrange their teaching and learning activities. Fortunately a number of valuable researches, in particular empirical documents on OBE course reform has provided much more useful reference and

assistance in practice for us. We took the subject, Microeconomics in Heilongjiang Bayi Agricultural Universities, China, as an example to make OBE curriculum reform and to show the different objectives and assessments of OBE from traditional course.

#### 3.1 The Different Objectives between Traditional and OBE Course

Table 1. shows the different objectives between traditional and OBE course. According to Christopher & Gavin(2013), these objectives are assumed in order to make the assessment tasks have a real impact on students' learning and should follow these conditions: (1) are consistent with the expected outcomes and achievements; (2) focus on the knowledge and skills which are valuable to the subject context and other related fields; (3) are reasonable and effective to the content of microeconomics within the course area; (4) can provide valuable feedback from students; (5) are fair and reliable. It notes that innovation ability of students is underlined because innovative education are widely implemented in college and universities, getting a certain innovation credit representing innovative ability of students is a necessary requirement for graduation.

**Table 1. Comparison on Objectives and Outcomes of Traditional and OBE Curriculum**

Traditional course objectives	CILOs(Course intended learning outcomes) under OBE
<p>To enable students to:</p> <p>(1) understanding the fundamental connotation of microeconomics, and basically know other subjects related to microeconomics and some practical domains.</p> <p>(2) master the main theories and rules of microeconomics, such as price decision, consumer and producer behavior, different market style and so on.</p> <p>(3) analyze and illustrate economic phenomenon and problem using the theory learned.</p>	<p>Upon successful completion of the course, students will be able to:</p> <p>CILO1* clearly describe the nature, structure and function of microeconomics,</p> <p>CILO2 master the main research method, construct the basic logical thinking like economics, such as learn to use and set the necessary hypothesis before formal analysis.</p> <p>CILO3 distinctly understand the primary and significant theories and the practical roles and values</p> <p>CILO4* have some certain theoretical attainment and can simply describe, explain economic phenomenon, and better to find economic problem.</p> <p>CILO5* develop some research interest and focus on those the extended disciplines, for example statistics, econometrics.</p> <p><b>On innovation ability, students will be expected to show:</b></p> <p>I-CILO1 willingness to think and good at finding problem finding</p> <p>I-CILO2 try to innovate, actively attend all kinds of competitive events</p> <p>I-CILO3 not be afraid difficulties and form the spirit of never giving up</p>

Note: “\*” marks the objectives which related to innovation.

**3.2 Traditional and OBE Course’ assessments**

According to Wang (2010) [6] the assessment criteria should: 1) be matched with CILOs and I-CILOs; 2) be specific described; 3) be observed and measured; 4) reflect students’ learning expectation. Assessments are very specific and can be evaluated by the teachers in practical teaching. Biggs & Tang (2007) [7] provides three criteria to make teaching and learning activities align to above CILOs and I-CILOs. 1) the course must build on task-oriented knowledge, using economics theories to analyze economical phenomenon and issues; 2) students must be relevantly active, for example, they can complete the study in time and read some relative documents in spare time ; 3) in learning process, students are able to reflect and have a

clear understanding of their own participation. Students has a correct cognition of their participation for teaching-learning activities, hence it can provide an accurate feedback and evidence for further analysis when making survey around the students. Table 2 compares assessment tasks in the traditional and OBE course outline.

From these two tables, established assessments or tasks and CILOs of OBE are more multiple and concerned about practical ability of students compared with old course, particularly, students have more chances to demonstrate their learning outcomes and achievements, and during this process, students can greatly enhance their confidence and mental health, also inspire their motivation for exploration even active their scientific genius.

**Table 2. Comparison of Assessment Tasks in the Old and OBE Course Outline**

assessment tasks in old course outline	assessment tasks in OBE course outline
<p>(1) peacetime accomplishments count for 30%, including performance in the class, assignments and quizzes.</p> <p>(2) final exam is in proportion of 70%, normally close-book style, the question types are generally choice, analysis related to figures, essay and calculating question.</p>	<p><b>peacetime accomplishments count for 50%:</b></p> <p>students are divided into groups, each group introduce an economic phenomenon and put forward a corresponding economic problem. → CILO2,3,4 (20%)</p> <p>each group will be assigned to make a 15-minute presentation for the content of a chapter, and members in this group should have their own contribution. → CILO4,5 (30%)</p> <p>(3) 10 weekly online test. → CILO2,3,4 (40%)</p> <p>(4) each group according to ability write a simple paper and will be given 15-20 minutes to illustrate. For this mission,</p>

	<p>students will rudimentary know how to search academic documents online, brief procedure of a paper writing.→ CILO4,5 (10%)</p> <p>each member's score or grade in above four tasks is according to the whole group score and personal weight based on performance</p> <p><b>final exam counts for 50%</b></p>
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#### 4. Evaluation in OBE Cultivating Program is the Evidence of its Revision

Assessment on validity and quality of OBE talents' training program is the primary evidence for its revision, improvement even reestablishing. That is also a test and certification for the validity and rationality of those established assessments, tasks or indicators.

There are some analytic models, methods and tools which can be used for evaluating the effect of OBE course in talents' cultivating project. For example, we can achieve implementing effect through correct measuring students' cognition for OBE curriculum reform and evaluate the set rating scale with Rasch model and CFA(Confirmatory factor analysis) method [8,9]. Rasch analysis is ideal for determining the extent to which items belong to a single dimension and the positions of these items sitting within that dimension [10], while CFA which assume that the data is normally distributed using variance and covariance of items is also a valid tool for determining number of dimensions and which items belong to each dimension. They are all measuring tools for validity and reliability of rating scales. The main test statistics of Rasch analysis are item fit statistics, indicators of reliability and separation, category setting analysis and Differential item functioning (DIF) analysis. CFA can measure the analysis belongs which factor models, and whether the rating scale examine the same potential characteristic. There are more applications for these two methods in researches which can be provide valid and reliable analytic tools and evidence hopefully for future research and development of OBE practice.

We took two classes with 75 students in Heilongjiang Bayi Agricultural Universities to be as an experiment units and set 5-point positively packed rating scale. Its scores and categories are: 1/strongly degree, 2/degree, 3/neutral, 4/agree, 5/strongly agree. Fourteen items are created in this scale. With Rasch model and CFA, we explored the validity of

this scale based on the real data from survey around these students and found the scale can be as an effective tool for measurement and evaluation on the quality of OBE curriculum reform.

#### 5. Conclusion

Undoubtedly, OBE is a very efficient educational idea for promoting the quality and further development of higher educational institutions because of its fundamentally outcomes-oriented design. However, it does not implement in practice of talents' training program easily due to the complexity of education itself and it really needs a very long and complicated process. That should be the striving direction of higher education. Talents' cultivating program of higher educational institutions is the basic principle for the education of college students. In our opinion, cultivating objectives in this program should be established by following three criteria: science direction, social demand and students needs. Requirements on professions for graduation are supposed to have tight relations with those objectives, and it will covers the requirements of main subjects in this professional domain. Curriculum system and teaching-learning activities are the primary arrangements in practice and OBE course creation can be as a starting and key point for the reform of the whole talents training program. Furthermore, the evaluation on the validity or effect of OBE reform is the useful evidence for the choice of measuring tools and future revision of talents' training program. Hence, scientific and effective analysis and methods are necessary, particularly for OBE application

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