

Outcome-Based Education - Assessment, and Continuous Improvement

"A comprehensive approach to organizing and operating an education system that is focused in and defined by the successful demonstrations of learning sought from each student" (Spady, 1994).

In Spady's words: "Outcome-Based Education 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 means starting with a clear picture of what is important for students to be able to do, then organizing the curriculum, instruction, and assessment to make sure this learning ultimately happens". Such an approach presupposes that someone can determine what things are "essential for all students to be able to do", and that it is possible to achieve these things through an appropriate organisation of the education system and through appropriate classroom practices.

In addition to the idea that outcomes should describe long-term significant learning, OBE is underpinned by three basic premises:

All students can learn and succeed, but not all in the same time or in the same way.

Successful learning promotes even more successful learning.

Schools (and teachers) control the conditions that determine whether or not students are successful at school learning.

On to these points we can overlay the philosophical base suggested by Mamary (1991) in his discussion of outcomes-based schools:

All students have talent and it is the job of schools to develop it.

The role of schools is to find ways for students to succeed, rather than finding ways for students to fail.

Mutual trust drives all good outcomes-based schools.

Excellence is for every child and not just a few.

By preparing students every day for success the next day, the need for correctives will be reduced.

Students should collaborate in learning rather than compete.

As far as possible, no child should be excluded from any activity in a school.

A positive attitude is essential. (If you believe that you can get every student to learn well then they will.)

Whatever approach to teaching one may use, it is important to keep the following points in mind:

- ✓ Your main focus should be on LEARNING rather than teaching.
- ✓ Students cannot learn if they do not THINK.

- ✓ Thinking is facilitated and encouraged by the PROCESSES that you use to engage students with the content, as well as by the CONTENT itself.
- ✓ Your subject does not exist in isolation-you have to help students make LINKS to other subjects.
- ✓ You have a responsibility to help students LEARN HOW TO LEARN.

Successful learning for all students is both the starting point and the bottom line of outcomes based planning. For this reason, all decisions about instruction should be guided by a consideration of which approach will be most likely to enhance students' efforts to achieve the desired learning outcomes. One approach that can be highly successful is based on the suggestions of Vickery (1988), and it involves the following:

Students are encouraged to take some responsibility for their own learning, and continued support from the teacher becomes contingent upon the students' acceptance of this responsibility.

If this approach to teaching is to be used, the outcomes-based programme would need to include the following:

1. A clear set of outcomes that all students will achieve (if you like, a minimum set of outcomes). Teachers will need to select, from all the possible outcomes, those that should be given top priority. These should be the learning outcomes that will be of most value to the students and they should be written in language that the students can understand. It is often useful to provide examples to students of what they will be able to do when they have achieved those outcomes.
2. A clear set of suitably graded extension outcomes for those students who progress beyond the minimum outcomes. These extension outcomes should provide students with a deeper understanding of the issues being studied, rather than take them on to the next issue that all students will study.
3. A detailed specification of the prerequisites that students must master before attempting to achieve each new outcome.
4. Plans for several different teaching strategies that can be used to help students achieve the desired learning outcomes.
5. Plans for guided practice sessions during which students can receive feedback on their progress towards the learning outcomes.
6. A variety of tests to provide both the teacher and the students with feedback.
7. A variety of mastery tests (at different levels).
8. Resources and teaching techniques to assist students who do not master the required outcomes as quickly as other students.

Because of its focus on student success, outcomes-based education places much more importance on individual learning than many other approaches to education. One of the key questions in outcomes-based programming is “What are reasonable and attainable outcomes for *each* student?” Once that question has been answered, teachers need to consider how they will keep records of individual students’ progress towards these outcomes. Record keeping becomes much more important than it might be in situations where testing is a necessary evil rather than an integral part of student learning. It is advisable to involve students in this record keeping so that they are reminded continually of the goals towards which they are working, and of the need for them to accept some of the responsibility for achieving those goals.

To guarantee the outcome of the course, the teaching of each topic in the course contents to be designed to meet aforementioned criteria (a-n) and evaluated by a set of assessment tools. Notice the keywords as follows:

“define, repeat, remember, describe, explain, discuss, illustrate, interpret, analysis, derive, apply, compare, solve, calculate, perform, produce, justify, and evaluate.”

These keywords determine the time and effort that the instructor has to spend on each topic. It also indicate the level of complexity for the learning process. The student’s learning outcome will be evaluated according to the keywords using the assessment tools. These outcome based course assessment and evaluation tools are a combination of the following:

1. Homework assignments,
2. Quizzes,
3. Exams,
4. Class Attendance,
5. Design Project and laboratory written reports,
6. Design Project Oral Presentation,
7. Computer Simulation using C, C++, MATLAB, LABVIEW, etc
8. Prototype development, if any,
9. Laboratory Testing / Project teamwork,
10. Course assessment (by students),
11. Instructor’s teaching performance evaluation (by students).

To guarantee the outcome of the course, the teaching of each topic in the course contents is to be designed to meet the aforementioned criteria (a-n) and evaluated by a set of assessment tools selected from the above (11) tools. Table below shows the mapping of the sample " " course topics to criteria (a-n) and its corresponding assessment tools.

Over the past three years, student design project performance has been evaluated based on written reports and oral presentations. The key elements that the student had to demonstrate in their design project include

- Were the objectives and purpose clearly stated?
- Was the problem well defined?
- Was the project properly justified (Why?) (Scientific, economic, political, value?)
- Was the design, analysis and modelling understood?
- The approach taken was reached as part of a selection process?
- Are the results technically and economically feasible?
- Effective conclusions / recommendations?
- Quality of the work or design.
- The content was well organized?
- Appropriate use of graphs, charts, board, audio-video.
- Was the message clearly delivered?
- Teamwork was evident in the presentation?

Start by assessing the students' prerequisite knowledge and skills; if they do not understand essential prior knowledge or if they do not have the skills on which you want to build you must provide instruction on these prerequisites.

Next, prepare the students by explaining the outcomes that they are to achieve (what they will be able to do when they have completed the unit satisfactorily). To be meaningful, each outcome must be placed within an appropriate context and it should be related to one or more of the Key Competencies.

Then provide whatever forms of whole-class instruction or individual/group work you consider will have the best chance of enabling all the students to achieve mastery of the unit.

Next, organise guided practice for the students so that they can be evaluated informally and provided with feedback to enhance their learning. The emphasis here is on *successful* guided practice through careful selection of examples and problems.

When most students seem to be ready to demonstrate mastery, assess their learning, or have the students assess their own learning through an appropriate form of self-assessment or peer assessment. This assessment should take into account the context in which outcomes should be demonstrated.

Students who have achieved mastery then work on enrichment activities while those who have not achieved mastery receive additional instruction and practice.

All students then take a summative test. Those who do not demonstrate mastery on this test receive an “incomplete” grade that they are required to convert to a mastery level through additional effort.

To be useful in an OBE system, assessment should conform to the following principles:

1. The assessment procedures should be valid - they should actually assess what you intend them to assess.
2. The assessment procedures should be reliable-they should give consistent results.
3. The assessment procedures should be fair - they should not be influenced by any irrelevant factors such as the learner’s cultural background.
4. Assessment should reflect the knowledge and skills that are most important for students to learn.
5. Assessment should tell teachers and individual students something that they do not already know. That is, it should stretch students to the limits of their understanding and ability to apply their knowledge.
6. Assessment should be both comprehensive and explicit.
7. Assessment should support every student’s opportunity to learn things that are important; and,
8. Because learners are individuals, assessment should allow this individuality to be demonstrated.

Outcomes-based programming makes teaching purposeful and systematic, rather than haphazard, while still allowing students to discover, to follow their interests, to take responsibility for their own learning, and to develop both personally and academically. It enables teachers to provide students with *appropriate* and *purposeful* learning experiences and opportunities so that they can develop originality, self-motivation and independence at the same time as they acquire useful knowledge and skills.