



*Courses vs. Competencies:
a comparative analysis*

*Dr. Gary Woodill
Chief Learning Officer
Operitel Corporation*

Courses vs. Competencies: a comparative analysis

**Dr. Gary Woodill
Chief Learning Officer
Operitel Corporation**

© 2004, Operitel Corporation. All rights reserved.

There are many ways to organize instruction and the assessment of learning. Two of the most common ways are either to organize educational content into *courses*, or to divide what needs to be learned into *competencies*. Course-based education and the competency-based education differ in several ways, including the way the content is divided, the criteria for success, and the methods of evaluation. The purpose of this paper is to provide a comparative analysis of the history, focus, roles, instructional methods, assessment methods, and the advantages and disadvantages of each approach.

Course-based education

Course-based education uses a sequencing metaphor (a course or path) to describe a trajectory that learners follow to complete a set of requirements. In educational terms, the path can be seen as a “course of studies”. While the idea of the course of studies is centuries old, the modern notion of a course, framed within a specific time and with a test at the end, probably originates in the mid-19th century with the advent of grade levels. The organization of schooling into grades came with the rise of mass education.

In North America, the rapid rise of state-supported schools for all school-age children at the beginning of the 20th century, led to overcrowding. At that time, only 5% of the student population would go beyond elementary school, so schools had to find efficient ways of selecting “the best” students to go on to high school and university. The answer was a combination of grading and IQ tests, based on the latest scientific theory of the “normal distribution” of test scores (a.k.a., “the bell curve”).

Final grades for a course were based on the percentages assigned to different questions or assignments, and the average of the scores on a number of tests taken throughout the school year. Because of this mass approach to assessing learning, there was little individualization, and a great deal of emphasis on the *content* of the curriculum.

This approach to education is generally seen as “the traditional approach”, even though the practice of grading students is only about 150 years old. Other aspects of this approach, such as recess, raising hands, and sitting in rows came from Prussia in the 1770s. It is a model that fitted well with the values of the Industrial Revolution and the puritan sensibilities of the Protestant Reformation.

Course-based education is decidedly teacher-centric and content-centric, and, in spite of many attempts at educational reform, is the predominant approach in schools and universities today. Lacking other models, for the most part, corporate training has also adopted this approach. In course-based education, a teacher planning for a new course addresses most of the following questions:

- What is the general content of the course, and what of that am I required to cover?
- How much content is that in quantitative terms (e.g. pages of text, number of topics.)?
- How much time do I have to have the cover the required content?
- What else can I add to the course that will help teach the content (e.g. films, guests, student presentations.)?
- How much class time will these additional activities take? How many classes can be devoted to evaluation procedures?
- How much time, on average, do I have left over to devote to covering content in each class?

The residual time for content coverage then determines how much material is “covered” in each hour of in-class teaching time. Teachers see themselves as having “taught” the course when they finished *covering* all material that they have decided is necessary. But, there are major problems with this approach:

In course-based education, teachers are assigned a course (or set of courses) to “teach”. This places the teacher in a position of both power and responsibility. The position is powerful in that the teacher makes most, if not all, of the decisions in his or her classroom. The teacher is responsible for maintaining order and discipline, for motivating learners, and for having a learners achieve the results that are required by the teacher's employer and society at large.

The learner's role is to “absorb” the materials being taught, and to prove that those materials have been absorbed by demonstrating knowledge and understanding in an examination process.

While many different instructional methods can be used within the framework of a course, because of the need to “cover” materials, the predominant method in current use is oral presentation followed by testing. This is still seen by many in the population at large as the essence of teaching. Is not surprising, therefore, that this “Tell-Test” approach is just as predominant in online learning as it is in the classroom.

While course-based education may be efficient in processing large numbers of students, it has serious problems. Because it is based on the average, the instructional approaches used may be inappropriate for those who are slower or faster in learning than the middle group. Graded tests provide little diagnostic information, and often result in labels for those who don't fit the method. With average-based education only a few can do really well, while, at the same time, large numbers of students are “passed” with serious gaps in what they need to know. As Torshen (1977) noted, “...students fail so often and so universally that some people are convinced that failure is an essential and inevitable aspect of the educational process.” (p. 3) He added that “the instruction available in many classrooms is inappropriate for the levels at which many of the students are

functioning. Many students lack basic skills and knowledge needed to learn from the instruction presented to them.” The organization of course-based education places an inordinate emphasis on the rapid presentation of course content rather than the process of learning.

“This focus on content can also lead to an emphasis on learning factual information rather than mastering higher-level thinking skills. Research is shown the retention of factual content beyond the final exam is minimal; most of it is lost within a few weeks. Of course, factual content that the student continues to use in other classes does tend to be retained, but this kind of repetition usually occurs only with the student's major. Think about undergraduate courses you took in fields unrelated to your current discipline and ask yourself how much factual content you can recall today.”(CTL, 2001, p. 1)

Dissatisfaction with course/average-based education has led to the development of competency-based education.

Competency-based education

Competency-based education began in the early 1970s in the United States as part of a movement towards accountability in schools. It was influenced both by the 1960s trend towards individualization and the increasing use of behavioural objectives. Systematic educational objectives had been developed in the 1940s as part of the growing popularization of Bloom's Taxonomy of Educational Objectives, with its cognitive, affective, and psychomotor domains.

Benjamin Bloom and his followers were also instrumental in promoting the idea of “mastery learning” whereby students attained minimally adequate competence in *all* the skill and knowledge areas required in a given curriculum. This was coupled with a redefinition of aptitude from the ability to do something (vs. no ability) to the ability to do something quickly. This new perspective meant that that anyone could master a learning task with sufficient time.

A new optimism followed in which all learners were seen to be able to achieve any learning goal, given enough time and the right learning conditions. This is reflected in the seven “principles” of competency-based education, articulated by Blank (1982):

“Principle 1: Any student in a training program can master most any task at a high level of mastery (95 to 100% proficiency) if provided with high-quality instruction and sufficient time.

Principle 2: A student's ability for learning a task need not predict how well the student learns the task.

Principle 3: Individual student differences in levels of mastery of a task are caused primarily by errors in the training environment, not by characteristics of the students.

Principle 4: Rather than becoming fast or slow learners, or good or poor learners, most students become very similar to one another in learning ability, rate of learning, and motivation for further learning when provided with favourable learning conditions.

Principle 5: We should focus more on differences in learning and less on differences in learners. Very seldom do we critically examine the instructional process as the source of differences in learning outcomes and systematically try to correct it. The competency-based approach puts the focus where it belongs, less on the learner's characteristics and more on adjusting the learning process to maximize the outcomes reached by each student.

Principle 6: What is worth teaching is worth learning: if it is important enough to be included in the training program, it is important enough for each and every student to learn it and to learn it well.

Principle 7: The most important element in the teaching-learning process is the kind and quality of instruction experienced by students.”

On the corporate front, David McClelland (1973), a well-known Harvard professor famous for his work on achievement motivation, articulated a performance-based definition of competency. He asked a set of high-performing American foreign service information officers their secrets of success, and decided that there were a number of personal characteristics necessary for anyone to achieve high performance in any role. He called these characteristics “competencies”, defined as “...an underlying characteristic of an individual which is causally related to effective or superior performance in a job”. By 1990 McClelland had distinguished between two levels of competencies, “differentiating” competencies which distinguish superior from average performers, and “threshold” or “essential” competencies needed to perform a job at a minimal or average level (Spencer, McClelland and Spencer, 1990). Zwell (2000) has

suggested that threshold competencies be called “skills” to distinguish them from differentiating competencies.

According to McClelland and his colleagues, “competencies can be motives, traits, self-concepts, attitudes or values, content knowledge, or cognitive or behavioral skills - any individual characteristic that can be measured or counted reliably and that can be shown to differentiate significantly between superior and average performers, or between effective and ineffective performers...Competencies include an intention, action and outcome.” (Spencer et al., 1990, cited in Radsma)

There has been, historically and conceptually, a strong link between competencies and behavioural objectives. This is because both can be broken down into small components, allowing a thorough task analysis before teaching takes place, and permitting a very rational approach to planning curriculum. McAshan (1979) cites the following advantages of competency-based education:

1. Avoids duplication of content within a program;
2. Establishes and maintains consistency of competencies taught within courses, regardless of the instructor teaching a course;
3. Improves individualization of instruction -- content tailored to meet the needs and personal characteristics of a learner, adaptation of content and materials to the learning rates of students, the presentation of content in self-instructional modules, and, a learner's increased choice of the content, objectives, modules, or other instructional materials and resources;
4. Aids in the refinement of government-approved accreditation practices;
5. Revises and implements appropriate systems of evaluation and reporting of student achievement;
6. Better communicates to the students the learning tasks that they are expected to achieve and how their success will be determined;
7. Better provides students with ongoing information regarding their personal progress;
8. Better prepares students to function at all levels of learning - cognitive, psychomotor, and affective taxonomies;
9. Makes teachers more accountable to the general public for the educational program standards accepted by educational institutions;

10. Refines certification practices;
11. Provides an efficient means of in-service training and professional development opportunities in order to upgrade the professional competency of all faculty members;
12. Bases a student's fitness to be employed in a given capacity upon his or her demonstrated ability to perform in field situations those functions that are deemed necessary in the positions;
13. Better determines student achievement through more systematic procedures of evaluation; and,
14. Improves student achievement of desired competencies.

A competency-based education process begins by finding the outcomes each learner is expected to attain. Then, an individualized instructional program that will help each student attain these outcomes is designed. Because students learn at different rates, and have different learning preferences, a variety of instructional approaches is needed if each student is to achieve a set of specific educational objectives. (Note that all students may not have the same learning objectives.)

Typically, the process of designing instruction based on competencies involves defining objectives, administering a pre-assessment, providing instruction, diagnosing problems or weaknesses, providing alternative instruction to deal with problems and weaknesses, and administering a post-assessment. Learners who do not successfully attain the minimal level of performance for a given competence then repeat the process until they succeed.

Discussion

What course-based education and competency-based education have in common is that the instructor/trainer/teacher decides on what is to be taught. In the case of course-based education, the instructor decides on the “course of studies” that the learner will follow within a given time frame. In the case of competency-based education, the instructor breaks what is to be learned into discrete components and then requires the learner to master them. In this regard, both course-based education and competency-based education can be seen as “teacher centric”.

Where the two approaches differ is in the expectations for success. Course-based education, typically based on averages and distribution curves, involves teaching groups of students, and usually results in an elite few performing at a high level, a large majority achieving at a medium level, and a unfortunate few failing or lagging behind. Competency-based education, on the other hand, expects all learners to eventually

succeed. Instruction is highly individualized, as learners finish the program of studies at different rates. All learners are expected to attain the minimal level of performance needed to master a given competence.

In the corporate world, there seems to be two levels of competencies - one at the minimal level, and one at the level of high-performance. In keeping with the school-based model of competency-based education, perhaps the term “expertise” should be used for the performance of competencies at a high-level, and the word “competencies” be used for the minimal acceptable level of the desired educational outcome.

While it seems clear that competency-based education is more desirable than course-based education, because of the possibility of individualization that it affords, delivering competency-based education generally requires more work on the part of the instructor. This is because of the need to have several instructional approaches within a group (and maybe even several approaches for an individual), and the onerous task of tracking progress for each individual competency for each learner. However, competency-based education has become much more feasible with the use of databases and learning management systems to manage, track and report on competencies, assessment results, and individualized approaches to curriculum.

References:

- Blank, William (1982) *Handbook for Developing Competency-based Training Programs*. Englewood Cliffs, NJ: Prentice-Hall.
- Block, J., Efthim, H., and Burns, R. (1989) *Building Effective Mastery Learning Schools*. New York: Longman.
- Bunda, M.A., and Sanders, J. (Eds.) (1979) *Practices and Problems in Competency-based Measurement*. National Council on Measurement in Education.
- Burns, R. and Klingstedt, J. (Eds.) (1973) *Competency-based Education: an introduction*. Englewood Cliffs, New Jersey: Educational Technology Publications.
- Carver, S. and Klahr, D. (Eds.) (2001) *Cognition and Instruction: 25 years of progress*. Mahwah, NJ: Lawrence Erlbaum.
- CTL (Center for Teaching and Learning-University of North Carolina). (2001) *Course Planning and Teaching*. Web page at: <http://ctl.unc.edu/hp11.html>.
- de Crook, M., Paas, F., Schlanbusch, H., and Merrienboer, J. (2002) ADAPT(IT): tools for training design and evaluation. *Educational Technology, Research and Development*. 50(4), p. 47.
- Hall, G. and Jones, H. (1976) *Competency-based Education: a process for the improvement of education*. Englewood Cliffs, NJ: Prentice-Hall.
- Levine, Daniel and Associates. (1985) *Improving Student Achievement through Mastery Learning Programs*. San Francisco: Jossey-Bass.
- McAshan, H.H. (1979) *Competency-Based Education and Behavioral Objectives*. Englewood Cliffs, New Jersey: Educational Technology Publications.
- McClelland, David. (1973) Testing for competence rather than intelligence. *American Psychologist*, v.28, pp. 1-14.
- Nickse, R. and McClure, L. (1981) *Competency-based Education: beyond minimum competency testing*. New York: Teachers College Press.

Radsma, Johanna. (1999) *Competency-based Initiatives and their Users: an exploration of competency modeling from the perspective of employees and their supervisors in three Canadian organizations*. Master's thesis, University of Toronto.

Schmieder, Allen. (1973) *Competency-based Education: the state of the scene*. American Association of Colleges for Teacher Education.

Spencer, L.M., Jr., McClelland, D., and Spencer, S. (1990) *Competency Assessment: methods, history and state-of-the-art*. Paper presented at American Psychological Association Annual Conference, Boston.

Sternberg, R. and Grigorenko, E. (Eds.) (2003) *The Psychology of Abilities, Competencies, and Expertise*. Cambridge, UK: Cambridge University Press.

Torshen, Kay. (1977) *The Mastery Approach to Competency-based Education*. New York: Academic Press.

Wang, M. and Walberg, H. (Eds.) (1985) *Adapting Instruction to Individual Differences*. Berkeley, CA: McCutchan.

Zwell, Michael. (2000) *Creating a Culture of Competence*. New York: John Wiley.