Underlying educational principles of Triple C

W. Wayne Weston MD CCFP FCFP

On the surface, competency-based education (CBE) looks a lot like objective-based education, made popular starting in the 1950s.[1,2] In fact, Hyland suggests CBE is "nothing more than reconstituted behaviorism [c]onstructed out of a 'fusion of behavioural objectives and accountability.'"[3] Grant expresses curiosity that, at a time when the learning theories informing educational planning and practice are far removed from behaviourism, CBE has become such a dominant force in medical education:

> [Competence-based curriculum frameworks] seem strangely to hark back to the days when curricula were based on the attainment of set objectives and the underlying theory was distinctly behavioral. This contradiction remains unresolved in the competence-based curricula of today, which simultaneously rely on student-centred learning methods.[4]

There is an ongoing debate about what exactly is meant by CBE and even disagreement about the definition of competencies and how they should be derived.[5] Basically, a CBE approach begins with an agreed-upon set of competencies (combinations of knowledge, skills, and attitudes) that are required to complete a program of learning. The following are some commonly described features of CBE.

- Educational goals are defined by a set of competencies needed by graduates to enter into their independent professional role (ie, what the learners must be able to do and the conditions under which these competencies must be demonstrated by the end of training).
- Methods of instruction are keyed to the competencies being learned and designed to support the acquisition of knowledge and skills.
- Periodic needs assessments help focus learning activities on areas most needing attention rather than on areas where competencies have already been achieved.
- Learning is self-paced rather than time-based.
- Satisfactory completion of training is based on achievement of all specified competencies.

Curriculum planners sticking to this short list of characteristics will concentrate on a behavioural model. But such a reductionist approach "can result in educators becoming over-focused on fine-grained components, causing learners and teachers to lose sight of the bigger picture."[6]

Although the Triple C report[7] emphasizes a CBE approach, several sections are based on educational principles other than behaviourism. In fact, the report is based on such a mixture of learning theories that it might more accurately be called a "competency-plus" approach. This is laudable for 2 reasons: medical education is far too complex to be designed from only 1 educational perspective; and the main criticisms of CBE relate to a narrow behaviourist approach that ignores important dimensions of medical education that it cannot capture.

There are many theories of learning that offer insight into how people learn and provide ideas on how to construct curricula. Merriam et al select 5 theoretical orientations from among dozens of learning theories and describe the different assumptions underlying each: "The behaviorist, humanist, cognitivist, social cognitive, and constructivist orientations were chosen for their diversity and for their insights into learning in adulthood."[8] Although, in some ways, the underlying assumptions are incompatible, each theory explains different aspects of learning so that, taken together, they provide a comprehensive understanding.

While the Triple C report does not elaborate on different theories and the emphasis on outcomes reflects a behavioural orientation, some sections do reflect other theories. For example, the report describes the importance of professional identity formation, which is best explained by a humanistic theory, quoting from the seminal monograph on American medical education by Cooke et al[9]:

> Becoming a physician is more than the acquisition of medical expertise. The learning environment needs to nurture all of the professional roles elucidated in the CanMEDS-Family Medicine ... document. In essence this is about professional identity formation: "Formation ... involves the process of becoming a professional through expanding one's knowledge, understanding, and skillful performance; through engagement with other members of the profession, particularly more experienced others; and by deepening one's commitment to the values and dispositions of the profession into habits of the mind and heart."[7]

The report acknowledges the limitations of a narrow approach to a competency-based curriculum:

> Several authors have emphasized the many strengths of [CBE], but they also highlight some risks of reductionism. There is a risk of short-sightedness if training is limited to immediate skills for actual professional activities, without preparing students for future transformations in the profession. Thus there should be room in training programs for learning some concepts and activities not linked directly to a given measurable outcome, but useful for future practice (eg, preparation

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for lifelong learning, reflective practice, team collaboration, or research).[7]

Wear[10] provides valuable criticism of a focus on competencies that threatens to narrow our gaze to a long list of practical skills while losing sight of the subtleties and nuances that characterize the profession of medicine.

> The sum of what professionals do is far greater than any of the parts that can be described in competence terms. They are making judgments, managing cases in the absence of definitive information, taking a multiplicity of factors into account, dealing with each case on its own merits, almost never replicating precisely the same approach because every case is never exactly like any other. The application of a corpus of knowledge with judgment to an individual situation is the essence of professionalism.[11]

The Triple C report goes beyond a strictly behavioural approach and describes the merits of CBE:

> It acknowledges the complexity of professional practice. It takes into account the necessity of becoming a reflective practitioner, and it contributes directly to the development of professional identity. Thus, promotion of a profound understanding of professional practice—that of family medicine—is an integral part of this worldview. Competency-based curriculum development optimally organizes an educational system in which learners practice constant adaptation to ever-changing contexts, in complex environments, and develop the skills to self-manage the ongoing competence development they require to deal with the dynamic changes inherent in professional practice.[7]

A key teaching and learning strategy for professional identity formation is mentoring, which is clearly acknowledged in the report: "Continuing professional development and mentorship will be important in the early years of practice, in particular, and more formal methods of facilitating these must be developed."[7]

In describing the importance of continuity in the learning environment, the report refers to the literature on communities of practice[12,13]:

> Learners in bounded learning environments become members of communities of practice. The three modes of belonging described by Wenger—engagement, imagination, alignment—highlight the importance of this for role modeling, reflection, and agency.[7]

Communities of practice represent a social cognitive learning theory that assumes that engagement with others is the fundamental process by which we learn and become who we are. When residents join a clinical team they are initially at the periphery but take on increased responsibilities as they become more fully engaged. Through their involvement with the other members of the team (community of practice), they learn how to think like a family physician and develop skills in interprofessional teamwork. The process shapes their identity as family physicians.

The report argues for an approach to CBE incorporating many educational theories:

> In terms of educationally sound evidence, competency-based medical education takes into account and builds upon many educational principles and theories, such as:
> - Experiential and work-based learning theories.
> - Adult learning and deliberate professional practice theories.
> - Social learning and constructivist theories.
> - The theory of clinical reasoning, reflective practice, learner-centredness, and Rogerian counseling.
> - The theory of situated learning.[7]

The report includes an important section on *professional socialization*. It outlines potential negative effects of the hidden curriculum and describes the importance of learning with and from family physician role models. Because medical education emphasizes the perspective of specialists, it might be necessary to "resocialize" family medicine residents to the culture of generalism and family medicine.[7]

The Triple C report resolves Grant's contradiction presented at the beginning of this commentary by ignoring the behaviourist pedigree of CBE and arguing that CBE incorporates the best features of numerous theories. Perhaps Grant is right that "curriculum design is a function of instrumental pragmatism, values and ideologies, political, social and managerial imperatives, and of the ideas that are current about how people learn."[4] In the end, the justification for a curriculum design is "unlikely to be in terms of research evidence; it will be in terms of ideology."[4]

Dr Weston is Professor Emeritus of Family Medicine at the University of Western Ontario.

Competing interests
Dr Weston is a member of the Editorial Advisory Board for *Canadian Family Physician*.

Correspondence
Dr W. Wayne Weston, 30 Winder Grove N, London, ON N6K 4K6; e-mail **wweston@uwo.ca**

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