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REFLECTIONS

The false dichotomy of quality and quantity in the discourse around assessment in competency-based education

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Abstract Competency-based medical education stresses the attainment of competencies rather than the completion of fixed time in rotations. This sometimes leads to the interpretation that quantitative features of a program are of less importance, such as procedures practiced and weeks or months spent in clinical practice. An educational philosophy like "We don't require numbers of procedures completed but focus on competencies" suggests a dichotomy of *either* competency-based *or* time and procedures based education. The author argues that this dichotomy is not useful, and may even compromise education, as long as valid assessment of all relevant competencies is not possible or feasible. Requiring quantities of experiences of learners is not in contrast with competency-based education.

Keywords Competency-based education · Assessment · Quantitative · Portfolio

According to an old but useful definition, the intended outcome of competency-based medical education (CBME) is "a health-professional who can practice medicine at a defined level of proficiency, in accord with local conditions, to meet local needs" (McGaghie et al. 1978). More modern definitions include "An approach to preparing physicians for practice that is fundamentally oriented to graduate outcome abilities and the organization around competencies derived from an analysis of societal and patient needs. It de-emphasizes time based training and promises a greater accountability, flexibility, and learner-centeredness" (Frank et al. 2010) and "Education for the medical profession that is targeted at a fixed level of proficiency in one or more medical competencies" (ten Cate 2014a, b).

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There is a wish to replace quantity of time in training by quality of outcomes attained before a qualification to practice is granted. The path to get there is bumpy and dynamics of training arrangements are not always well understood (Norman et al. 2014). The contrast between quality and quantity is such a misunderstanding, as it suggests that they represent an “either–or” situation.

Either you achieve competence by documenting time and number of procedures, or you achieve it by measuring performance. Indeed, this dichotomy was brought home to me by two recent experiences in which I sensed hesitation to acknowledge the importance of quantity of experiences when they work with CBME. One was a question from the audience during a keynote talk I held (ten Cate 2014a, b, April). I had a slide showing the conditions for entrustment of residents with the unsupervised care for a multi-trauma patient in the emergency room. One condition was that the resident should have followed a two-month rotation at an ER before. The public asked how logical it is to ask for 2 months of experience in a non-time-based program that CBME supposedly is.

The other experience was during a recent on-site review of a new dental education program, as a member of a Dutch national review committee. The program had changed from a traditional to a competency-based model. An interesting discussion with the dean developed over the course of the day that seems illustrative of a broader discourse around competence-based education. Whereas in the former dental curriculum the students were required to meet quantitative criteria (such as numbers of extractions, root canal treatments, crowns and bridges completed), the new curriculum follows a modern approach of competency-based education that stresses attained competencies rather than quantity of procedures done. It struck our review committee how worried students were that they would not meet adequate standards for independent practice, as the school had ceased to require minimum quantitative standards but instead put responsibility on students to provide proof of their competence in dental procedures in their electronic portfolio.

Nowhere in definitions of CBME cited above is to be found that quantity of exercises or experiences in the evaluation of learners is unimportant, but the confusion is easily understood. While competency-based education requires evaluation of standard levels competence, the time to meet these standards must be flexible. Hence in CBE it cannot be stated that the quantity of experiences or procedures practiced should be *equal* for all learners at the moment of certification. The argument however, that “we have adopted competency-based education, and *therefore* we look at the quality of the learners, not at quantity of experiences, such as time on tasks or numbers of procedures” is not valid. Requiring learners to demonstrate ability after x-numbers of procedures or to simply keep practicing frequently is a solid advice for the attainment of competence and expertise (Ericsson 2004, 2006).

There is another reason why abandoning quantity may be dangerous. To document individual progress, a portfolio approach is a sensible alternative for mass assessment procedures, very apt for workplace learning, and increasingly used in CBE programs. This recognizes individual differences in tracks, clinical experiences, time needed, et cetera.

Portfolios are usually presented as containers of documentation, to a large extent collected, owned and controlled by the learner (Challis 1999). Its success however requires quite a bit of effort from both learners and teachers (Driessen et al. 2005). Portfolios that are predominantly filled and read by the students themselves, and hardly by teachers because of a lack of time and skill to thoroughly evaluate them, cannot serve well as measures of competence (Driessen et al. 2007). In some cases too much emphasis is laid on the responsibility of learners to not only self-assess but also prove their competence to a level that is too readily accepted by schools as valid. This policy may not only be caused by

a lack of time to do the cumbersome evaluation of portfolios and insufficient electronic automation, but also by a lack of rigorous assessment tools for portfolios. The policy is often defended by a constructivist educational philosophy that learners should take responsibility for their own learning (and assessment). If such defense serves as an excuse to alleviate teacher burden, rather than a deliberate educational policy, it may be one of the reasons why constructivism has attained a less favorable press (Kirschner et al. 2006). The result is simply an inadequate maintenance of standards.

Too often quantities have been regarded as sufficient to determine competence: "if you have done this procedure five times, then I don't need to evaluate you any further"; "If you are a second year resident I assume you can be left alone". Actual competence must be observed and assessed. But before trusting a learner to work unsupervised (Cianciolo and Kegg 2013), it sure helps to know how often procedures have be done, and a logical approach is to require learners to meet some pre-conditions before they are eligible for evaluation and for a formal entrustment decision to work unsupervised. It can then be decided whether more practice is necessary.

While competency-based education by definition must look into actual competence and may acknowledge that some learners need more experience or practice and others less, clearly quantity of effort and experience is important and by no means in contrast with the need to evaluate qualitatively in competency-based education. A program that requires minimum numbers of procedures completed may well be competency-based. A program that does not require numbers of procedures or months of effort takes on a great responsibility to validly assess all intended competencies, which is not an easy task (Lurie et al. 2009). The dental students may really have had a valid point.

Conflict of interest None.

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