The Charismatic Journey of Mastery Learning

Thomas S. Inui, ScM, MD

professor, Department of Medicine, Indiana University School of Medicine and senior investigator, Regenstrief Institute, Inc., Indianapolis, Indiana.

Abstract

A collection of articles in this issue examine the concept of mastery learning, underscoring our journey is from a 19th-century construct for assuring skill development (i.e., completing a schedule of rotations driven by the calendar) to a 21st century sequence of learning opportunities focused on acquiring mastery of special key competencies within clerkships or other activities. Mastery-learning processes and standards have the potential to clarify learning goals and competency measurement issues in medical education. Although mastery learning methods originally focused on developing learners' competency with skillful procedures, the author of this commentary posits that mastery-learning methods may be usefully applied more extensively to broader domains of skillful practice, especially those practices that can be linked to outcomes of care. The transition to mastery-focused criteria for educational advancement is laudatory, but challenges will be encountered in the journey to mastery education. The author examines several of these potential challenges, including expansion of mastery learning approaches to effective but relational clinician advice-giving and counseling behaviors, developing criteria for choosing critical competencies that can be linked to outcomes, avoiding a excessively fragmented approach to mastery measurement, and dealing with "educational co-morbidity."

Philip Tumulty was Johns Hopkins Hospital's "doctor's doctor." White� haired, red-cheeked and vigorous, he seemed to know more medicine than almost anyone else at Hopkins and he put this knowledge to use in the care of patients… The times I most enjoyed learning from Phil were in his end-of-afternoon "case discussions" in the Thayer classroom. Phil and one of his patients would sit in the front of the classroom and talk as he "took" the history… I particularly remember his conversation with a retired judge from Virginia, who was to be discussed as a case of possible granulomatous arteritis. Probably wanting to learn more about fatigue and waning vitality, Phil asked the judge "what he liked to do." A whole world of country life in the rolling hills of Virginia opened to our sensibilities. We were going to the kennel in the autumn to let the eager dogs out – then rambling across the blue hills behind the dogs on the pretense of "hunting pheasants" but actually wanting just to breathe the air and be in the fields, shotgun unloaded,

Correspondence should be addressed to Thomas S. Inui, Department of Medicine, Indiana University School of Medicine and Regenstrief Institute, Inc. 1050 Wishard Blvd. RG5, Indianapolis, Indiana 46202; tinui@iupui.edu.

broken over the arm, strolling under the azure sky. What space; what beauty. How we loved being there.

— Thomas S. Inui, *Carry Me Back*[1]

I was a junior medical student when I first encountered Dr. Philip Tumulty, a professor of medicine at the Johns Hopkins University School of Medicine, and realized I was in the presence of a "master" in medicine. Thereafter, I maximized my exposure to Dr. Tumulty whenever possible, attending his Thursday afternoon conferences whether I was on the medicine rotation or not, arranging to shadow him working with patients in his private outpatient clinic, never missing a clinical pathological conference he conducted, and seeking his advice on my residency training program choices. Phil (as I eventually began to call him) became a hero of mine for his manner of interacting with patients. He said that the internist's "operating room" is our time at the bedside talking with patients. When reading his one book – *The Effective Clinician*: *His Methods and Approach to Diagnosis and Care*[2] – I can still "hear" his voice nearly 50 years later.

In many ways, after being exposed to a truly masterful clinician, I consciously sought to advance my own skills and to emulate Phil's approach to patient communication. When I became a health services researcher instead of following in his footsteps as a hospital-based generalist clinician–teacher, Phil asked me why I was doing research on doctor-patient interaction. I explained to him that I wanted to contribute to the scientific foundations of doctor-patient communication and was trying, in my own way, to provide a foundation of evidence for the many good habits that others, myself included, had gained from their exposure to him. Today, as a lifelong learner and researcher focused on these matters, I would describe myself as an individual who has consciously pursued his own optimal competency, the capacity to *perform* well as a clinical communicator – my own mastery learning journey.

Challenges Anticipated in the Journey to Mastery Learning

I am excited and inspired to see the notion of "mastery learning" advanced significantly in this issue of *Academic Medicine,* by the publication of a collection of articles which incorporate many threads of educational excellence I recognize, not only as a learner but also as a practitioner, a researcher, and an architect of curricula. These include seeking clarity in the description of critical domains of knowledge and skills; measuring and assessing learner achievement against standards developed on the basis of expert consensus or other foundations of evidence for establishing a recommended competency "threshold"; giving learners feedback intended to promote growth; measuring progress in the formation process by achievements instead of merely by checkmarks beside rotations and the calendar; and using implementation research methods to promote penetrance of these progressive elements within and across academic health science centers. Any innovator in medical education could seriously consider using these articles as a "textbook" of sound approaches to the working issues that deserve attention along the road to developing new curricula or educational technologies.

While I am an advocate for the mastery learning approach, it seems to me that smoothly pulling the threads of mastery learning forward will encounter some challenges. Some of these difficulties will include the following:

Incorporating non-standardized competencies

The methods intrinsic to mastery learning may at first be best suited for application to skillful behaviors of a procedural nature in which standardized practices can be the focus of performance and assessment. Indeed, procedures such as placement of central intravenous lines are used to illustrate the application of mastery learning approaches. It seems to me, however, that the same approaches might also be fruitfully applied to other critical competencies like physician provision of advice and counseling intended to support patient choices.

I recall a Delphi survey by Professor John Williamson of the Johns Hopkins School of Public Health conducted in the early 1970s for the American College of Obstetrics and Gynecology, in which he asked practitioners to describe activities that had made a critical difference in the quality and outcomes of care for patients in their practices. Somewhat to Professor Williamson's surprise the activities cited were largely not ones such as making difficult diagnoses or performing timely Pap smears, but instead entailed episodes of careful communication and successful interaction with patients that led these patients to good decisions, whether or not there was a single best choice from a biomedical perspective. These kinds of key competencies on the part of practitioners might be the focus of mastery learning research and practice, but the behaviors are interactional, situational, and responsive to patient differences. By their very nature they are not standardized, instead they are adaptive and relational.

Determining when to use mastery learning approaches

A second challenge to be anticipated is the need to discern which skillful behaviors or other practice competencies are going to deserve to be subjected to mastery learning approaches. This sorting out might start with the kind of expert consensus of opinion that has led to the "Stanford 25"[3] or the Association of American Medical Colleges' "Core Entrustable Activities for Entering Residency,"[4] but in the end the grounds for selection will also require linkage of skillful procedures or other behaviors to outcomes of care. This kind of educational outcomes research might usefully focus on one or more of a very broad and diverse array of care outcomes, including patient trust, decisional comfort, adoption and adherence to recommendations, health improvement or health maintenance, and patient and provider satisfaction with care rendered, to cite but a few examples.

Integrating competencies and key skills

A third challenge for mastery learning comes into view when one contemplates the need for integration and synthesis of the competencies and key skills. In the usual reductionist approach to assessing educational effectiveness, we will be tempted to consider specific competencies in isolation and to develop refined measures of performance for these behaviors individually. In doing so, we will be emulating ballet class evaluations of student competency in producing basic positions of ballet – first position, second position, fifth

position. Assessing these competencies one by one may become an end in itself, but the actual aim of teaching and learning ballet is the synthesis of these basic positions into an artful, fluent performance of "Swan Lake." Fragmentary assessment of individual tasks in mastery learning could become a dead end in competency evaluation instead of serving as a stepping-stone to a more holistic assessment of key competencies in integrated processes of care.

Competency "co-morbidity" and underlying deficiencies

A final potential challenge in the march of progress to mastery learning is the failure to recognize education "co-morbidity." Experienced educators and the recent educational assessment literature[5] suggest that an isolated deficiency, whether of cognition, skill development, or other competencies, is more likely to occur if there are also other deficiencies in the portfolio of student learning, such as impaired emotional well-being, deficiencies in time management, poor task organization skills, and/or problems with "professionalism," such as arrogance or insufficient dedication to service. In the remediation of a single deficiency, it is likely that the "co-morbid" educational problems need to receive at least as much attention, measurement, evaluation, and remediation as the problem first identified. A situational or characterological inability to engage in serious self-reflection – of performance, mistakes, and root causes – may be present as an underlying deficiency that produces multiple comorbid educational deficiencies and may not be apparent from a narrow-gauge mastery learning assessment. A deficiency of a capacity for self-reflection may retard competency development and remediation, but also may impair patient care, team work, and ethical decision making.

What is the Journey? Where are We Now?

As described by other authors in the collection of mastery learning articles, our journey is from a 19th-century construct for assuring skill development (i.e., completing a schedule of rotations driven by the calendar) to a 21st century sequence of learning opportunities focused on acquiring mastery of special key competencies within clerkships or other activities. Clearly, my enthusiasm for competency-focused education makes me sympathetic to the latter approach. The pure rotation-by-calendar method results in some absurd situations.

When I spent several months at a Japanese national university to assist with curriculum reform in 2000, one startling discovery was that nearly every department with relevance to the clinical education process had its own inpatient clerkship, none of them longer than one week in duration.[6] This long parade of mini-clerkships had resulted from a German university policy applied to the Japanese national schools in which there could be no more than one professor per department. Anyone ready for promotion to the rank of professor, it followed, needed to have their own department, and each department would require its own clerkship. In the one-week clerkship model, the passive learning experience was to join rounds conducted by the professor to observe the "team's" interaction with patients and to absorb whatever wisdom might emanate from the discussion of the professor. The single task given to most students in clerkships was to review the chart of a patient on the inpatient service and present a summary of that case for professor's rounds. The cases chosen were usually patients who had been in the hospital for many weeks and resisted new examination

or interviewing. Under these circumstances, "passing" a clerkship required no more than a good 10-minute presentation. In the following week, the student would move on to the next clerkship. This was surely a *reductio ad absurdum* of the calendar-driven model of education. Any acquisition of true mastery in this environment was limited to methods of chart review.

We are well beyond this general model of rotation-driven education in most environments today. Objective structured clinical examinations for formative or summative evaluation of student skills in many schools mark progress at a minimum of two points in the medical school curriculum. Simulation laboratories have made their appearance widely in many schools to support performance assessment and feedback at the undergraduate and graduate medical education levels. United States Medical Licensing Examinations provide a summary assessment of knowledge but also of communication skills in clinical environments with standardized patients. Clearly, we are on a path that features mastery learning principles and practices. Recognizing that this is a process likely to be fraught with some challenges but also one that could confer substantial benefit, carefully reading the contents of the articles in this issue's mastery learning collection and deciding where your institution might be in this journey will be fruitful.

Acknowledgements

References

1. Inui, TS. Achieving Excellence in Medical Education. New York: Springer; 2006. Excellence in Medical Education: Looking Beyond "See One. Do One. Teach One" Foreword in Gunderman, RB; p. v-vii.

2. Tumulty, PA. The Effective Clinician: His Methods and Approach to Diagnosis and Cure. Philadelphia: WB Saunders Company; 1973.

3. Stanford School of Medicine. [Accessed July 23, 2015] Stanford Medicine 25. http://stanfordmedicine25.stanford.edu/.

4. Association of American Medical Colleges. [Accessed July 23, 2015] Core Entrustable Activities for Entering Residency. https://www.aamc.org/initiatives/coreepas/.

5. Guerrasio J, Aagaard EM. Methods of outcomes for the remediation of clinical reasoning. J Gen Int Med. 2014; 29:1607–1614.

6. Inui, TS. University of Tokyo School of Medicine Curriculum Project Final Report. International Research Center for Medical Education, University of Tokyo School of Medicine; 2000 Sep 27.