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Learning Undergraduates

Y C Chee

Education is one of the important activities of human kind for which there is government subsidy, substantial for the years of formal education and less so for informal education activities. Education and lifelong learning are hot topics among doctors, what with a revamped undergraduate medical curriculum and a structured postgraduate training program now in place, the recently implemented Medical Specialist Register and the likelihood of continuing medical education becoming compulsory in the not too distant future.

Learning is for life, for as long as the brain is able to receive, analyse, store and retrieve the information for use. Memory is vital for effective learning. When memory goes, all learning ceases. Those of us who deal with patients with dementia see the pathetic state of existence of such fellow human beings who revel if at all, only in the past with no cognition of the present nor the future. Therefore if we value the future and treasure the present, we need to continue learning as long as our brain is amenable to it. So how do we learn?

In this issue, on page 317 the authors⁽¹⁾ of the paper "How do Our New Graduates Prefer to Learn?" has used the Rezler's Learning Preference Inventory (LPI) as an instrument to assess one aspect of learning⁽²⁾. Twenty-eight doctors from one Department of a restructured hospital, who graduated from the medical faculty of the National University of Singapore in 1997 participated in the survey. Only one doctor (a male) preferred abstract learning. None of the females (12 of them) did, all preferring concrete learning methods. By definition, abstract learning involved learning theories and generating hypotheses with a focus on general principles and concepts, whereas concrete learning meant learning tangible, specific and practical tasks with a focus on skills. This was the only difference that achieved statistical significance. So in this first ever published local study among medical undergraduates, there appears to be a high inclination towards concrete learning.

The author states that the validity and reliability of Rezler's LPI is well established and is used to identify and categorize a range of learning preferences among medical students and practitioners. It has been used for academic as well as for need-based research and he quotes papers in the context of studies in the United Arab Emirates and Chile. Am I surprised at the local finding? No. Why? Our school culture has been one of spoon feeding and factual knowledge. In the Chinese stream of education, it used to be rote learning and memory. So much so that recently, there was implemented a national imperative for thinking schools and a learning nation. Furthermore, there are classes to teach thinking skills and creative learning. It will take some years before these cohorts of our school students arrive at the University and maybe then the Rezler LPI may show different results. But medicine is not an abstract subject. I wonder if it could be learnt without concrete skills and tasks. Probably not.

Learning and teaching are interrelated. Of course there is self-directed



Cover Picture:
 Pre-operative
 x-ray photograph
 showing Milch
 Type I displaced
 medial condylar
 fracture.
 (Refer to pages
 347-351)

learning where individual motivation alone is strong enough to drive the learning process. But in schools and through the University, there are teachers involved. Teaching is not a one-sided affair, the teacher teaches such that students learn. Ineffective teaching can result from having poor teacher, poor teaching or poor student learners or any combination with the opposite characteristics, e.g. good teacher-poor learners or good teacher-good student but poor teaching. In the medical setting, there exists besides the Rezler LPI, the Cleveland Clinic Clinical Teaching Effectiveness Instrument (C₃TEI)⁽³⁾. This has been implemented in all departments at the Cleveland Clinic and found to be reliable in both content and criterion – related validity. It is usable as an evaluation tool for a wide variety of clinical teaching settings, in inpatient and outpatient settings. Most importantly, its usefulness is limited to the measurement of clinical teaching and may not cover some of the nonclinical teaching activities. With this instrument, the Cleveland Clinic can now compare the teaching of individuals, different departments and divisions. The relevant stakeholders (faculty, trainees, program directors and chairs) now all have the instrument to measure the effectiveness of clinical teaching. After all, medical practitioners must practice clinical medicine and not just live in the abstract world of theories and concepts.

What does the medical faculty hope to teach its students? At the University of Virginia, these have been clearly spelt out⁽⁴⁾. The 12 objectives of medical education are:

1. The development and practice of a set of personal and professional attributes that enable the independent performance of the responsibilities of a physician and the ability to adapt to the evolving practice of medicine. These include attitudes that promote (a) humanism, compassion, and empathy; (b) collegiality and interdisciplinary collaboration; (c) continuing and lifelong self-education; (d) awareness of and response to one's personal and professional limits; (e) community and social service; (f) ethical personal and professional conduct; (g) legal standards and conduct; (h) economic awareness in clinical practice.
2. Competence in the human sciences: (a) in the understanding of current clinically relevant medical science; (b) in scientific principles as they apply to the analysis and further expansion of medical knowledge.
3. The ability to engage and involve any patient in a relationship for the purpose of clinical problem solving and care throughout the duration of the relationship.
4. The ability to elicit a clinical history.
5. The skills to perform a physical examination.
6. The knowledge to generate and refine a prioritized differential diagnosis for a clinical finding or set of findings.
7. The ability to develop and refine a plan of care for both the prevention and treatment of illness and the relief of symptoms and suffering.
8. The ability to develop a prognosis for an individual, family, or population based upon health risk or diagnosis, with or without intervention, and to plan appropriate follow up.
9. The knowledge and skills to select and interpret clinical tests for the purpose of health screening and prevention, diagnosis, prognosis, or intervention.
10. The ability to organize, record, present, research, critique, and manage clinical information.
11. The ability to select and perform procedural skills related to the physical examination, clinical testing, and therapeutic intervention.

Learning and teaching are interrelated... Teaching is not a one-sided affair, the teacher teaches such that students learn.

Any system that moves students away from remembering a huge knowledge base and then simply regurgitating it when required at examination time and moves them toward thinking about problems and how they can help solve them must be an improvement.

12. Knowledge of the social, economic, ethical, legal, and historical contexts within which medicine is practised.

For students high on a self-directed learning drive, this list, if endorsed by our University would be helpful to them. Of course, besides objectives, these need to be fleshed out into proper curricula appropriate for each year of study.

The author mentions in his paper in the SMJ two other topics of interest: problem-based learning and evidence-based medical education. I wish to touch on these briefly.

The problem-based learning (PBL) approach is based on active learning in small groups with clinical problems used as the structure for learning. The approach is 40 years old. Extensive resources are required for the operation of a PBL curriculum. It seems to be a more challenging, motivating and enjoyable way to learn. However a review of the literature showed no convincing evidence that PBL improves knowledge base and clinical performance⁽⁵⁾. The New Pathway curriculum at Harvard Medical School randomized 62 students in the classes of 1989 & 1990 to the PBL curriculum and 63 to the traditional curriculum. Its conclusion? The New Pathway group had "better relational skills" but this was questionable⁽⁶⁾.

Evidence-based medicine (EBM) as a term first appeared in medical literature in 1991 and is defined as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients"⁽⁷⁾. EBM is an important new paradigm of the medical profession. Teaching EBM has challenges and caveats. Three of each are given in a recent paper⁽⁸⁾. Like all scientific paradigms, EBM includes unspoken assumptions and beliefs about what wants as a valid question and valid evidence. Clinical medicine contains many subtleties that have not been adequately addressed within the EBM model. It thus appears the time is not yet ripe to use this model for teaching medicine.

While undergraduates are educated in their late teens, they soon pass into adulthood and graduate as adult doctors. For graduate programs, they are adult learners from the word, go. So is adult learning theory so different from that of school going children? A significant body of literature shows that mental development continues throughout adulthood. We have begun to understand better the evolution of "wisdom" and the changing balance between "fluid" and "crystallised" intelligence during the entire life span of individuals. These continuously evolving attributes often cause adults to have markedly different learning abilities from those of children.

For adult learners, who continue to learn throughout their lives, their learning "projects" share a number of very characteristic features; they are often poorly prepared to assess their own learning needs, and when forced by circumstances or of their own volition, they frequently learn in a self-directed manner. The last point is well documented in professions such as engineering and medicine⁽⁹⁾, which are currently experiencing extremely rapid changes and where journal education programs cannot possibly be flexible enough to satisfy all learning needs, no matter how extensive these programs are and how efficiently they are run.

Self-directed learning is not based solely on the wants of the student; it is also based on the requirements of the curriculum and the needs of patients. Self-direction might allow a student to move into areas of study away from the core curriculum but nonetheless it is well recognized that the examination system will usually ensure that learning also takes place around the core curriculum.

At medical school, learners are guided in their "self-direction" by the educational supervisor or mentor. This serves to overcome the well recognised problem of identifying one's own learning needs or addressing those areas one does not find exciting. Any system that moves students away from remembering a huge knowledge base and then simply regurgitating it when required at examination time and moves them toward thinking about problems and how they can help solve them must be an improvement. **SMD**

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