Lifelong , self-directed learning and the maintenance of competence: the triple helix of continuing professional development

Dave Davis*

Abstract

It has been proposed that we think of continuing medical education (CME) as a two-stranded helix, in which one strand represents the internal characteristics of the learner-physician, the other strand the culture and environment in which he or she practices and lives. In many countries, the product of these two strands has been increasingly termed 'continuing professional development', (CPD). This model holds implications for CME providers and programs of maintenance of competence: what we know about lifelong, self-directed learning (SDL) and the role of culture, environment and setting on learning.

This paper proposes an expanded role for CME or CPD providers, constructed on an understanding of self-directed learning, the environment or setting in which physicians work, and, on the evidence about effective CME methods. Finally, these concepts will provide a springboard to describe an idealized or conceptualized vision of the role of the CME provider - the third strand in a triple helix - building on self-directed learning, expanding the definition of maintenance of competence and attempting to effect optimal health care.

Introduction

Over a decade ago, the American educator Nowlen [1] proposed that we think of continuing medical education (CME) as a double-stranded helix - one strand representing the internal characteristics of the learner (his or her values, experiences and competencies), the other strand the culture and environment in which he or she practices and lives. For those familiar with the DNA molecule, this analogy has meaning. In Canada, Europe, Australia and elsewhere, the interplay between these two strands has been increasingly termed 'continuing professional development', (CPD).

Whatever the terms, this interplay holds implications for CME providers and programs of maintenance of competence. This paper will first touch briefly on: what we know about lifelong, self-directed learning (SDL); the role of culture, environment and setting on learning; and finally on an expanded role for CME or CPD providers. This last phase is constructed on an understanding of self-directed learning, the environment or setting in which physicians work, and, on the evidence about effective CME methods. Finally, these concepts will provide a springboard to describe an idealized or conceptualized vision of the role of the CME provider - the third strand in a triple helix - building on self-directed learning, expanding the definition of maintenance of competence and attempting to effect optimal health care.

The first strand: lifelong, self-directed learning

Definition

Twenty-five years ago, the American adult educator Malcolm Knowles defined self-directed learning (SDL) as "... a process in which individuals take the initiative .....in diagnosing their learning needs, formulating goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes." [2]

SDL is truly a process in which health professionals control their own learning: they determine their own learning needs, develop appropriate learning objectives and goals, choose resources and methods for learning and finally, assess what has happened in the process" [3]. Generally, such activity may be seen as a natural process, occurring inside or outside of formal educational venues. It is the learner's choice of activities to meet a particular learning goal that defines self-direction, and many combinations of learning activities may occur. Further, we can describe the competencies of SDL in much the same way as we do clinical competencies - by describing their knowledge, skills and attitudes.

Knowledge Requirements

Certain knowledge attributes are an important part of the SDL process. Here, a large and personal storehouse of information related to learning resources is essential to the process. In addition, physicians must also know which resources are reliable and current, which colleagues he/she can turn to, and which information sources provide relevant information. Further, physicians must be aware of new information in order to judge their practice, parameters to judge their practices, needs and gaps in performance.

The SDL skill set

The second aspect of SDL consists of those skills relating to the organization of learning. Previous concepts of learning pictured this process as moving through a series of simple steps to reach learning goals. In reality however, the SDL process is more interactive, involving opportunities and interactions in the environment, personality characteristics and cognitive processes, the context of learning, and opportunities to confirm their knowledge, often with colleagues. In addition to this basic process, physicians require the skills of information-seeking and retrieval, and evaluating both the evidence presented in learning resources and the outcomes that the learning has generated.

Key among the skills required for successful SDL is the ability to reflect on experience. This process, articulated by Schön [4], allows learners to identify their learning needs, and to be aware of, monitor and direct the growth of their knowledge, skills and expertise. His first stage outlines core, even sub-conscious "knowing-in-action", i.e., the body of the physician's existing knowledge and skills. In this milieu may come a second stage, the "surprise" in caring for a patient, provoking thoughts about learning and clinical questions, not in the physician's immediate grasp. This "surprise" then can lead to a third stage, called "reflection-in-action", thinking about different approaches to understanding and solving the problem while still in the clinical setting. The last stage of the cycle permits the physician to stand back from the clinical experience and "reflect-on-action", directing the physician's learning. It is through this process that new SDL can be effectively incorporated into the physician's "knowing-in-action", returning to the beginning of the reflective learning cycle.

Personal attributes and attitudes : the core of self-direction

Finally, self-direction may be seen as an internal set of values, establishing a goal towards which individuals strive, not driven just by specific settings: for the physician this may be an overall sense of professional responsibility to be a competent clinician. In this way, the achievement of self-direction follows closely others' models of personal development, for example those described by Maslow [5]. Such activities grow out of personal growth and achievement, the acceptance of personal responsibility for one's learning, personal autonomy and individual choice.

*. Departments of Health Administration and Family & Community Medicine Associate Dean, Continuing Education Faculty of Medicine University of Toronto

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There are two factors in the learner which affect the capacity of the learner to be self-directing. First, learners who believe that they are competent learners, with the skills to learn in a variety of learning situations, are more likely to be self-directed, independent learners. Second, SDL may be seen as a function of subject matter mastery; as the learner builds a base of knowledge and skills and develops a sense of accomplishment in the process, the motivation and ability to be self-directed grows.

The Second Strand: learning environments

This second section explores external forces which exert themselves on physicians; the role of CME providers in providing a structure for these forces; and, the beginning of a comprehensive model integrating SDL and the role of the CME provider.

Models of Change: external forces in the practice setting

There are several models of physician learning and change which articulate the role of external forces in physician's learning. It is clear, from regulations, policy, financial incentives and pressures of work and systems, that such external influences are profound.

Fox, Mazmanian and Putnam [6] interviewed more than 300 North American physicians in the late 1980s, and determined that physicians are motivated to change by forces, which may be social/cultural, professional, and personal, or combinations of the above. We have already explored internally directed self-learning one of several factors which may be in play in the career, practice, or life of the physician. In addition to the force of external pressures felt as forces for change, much learning may also be seen as situated, i.e., learning which occurs in, and is inseparable from, the practice context in which the knowledge is used. Clues which assist in framing the problems of practice, and in developing their solutions, are only available in the actual context of practice. While 'situated learning' often occurs in practice, there are examples which describe learning from participation in small groups or in problem-based formats, which simulate the practice experience, and help the physician to recall facts [7].

The traditional CME provider as a force for change

Recognizing the power of forces for change in the practice setting (and elsewhere in the environment), continuing education providers have offered a variety of activities and interventions to assist the learner. These include -among many others - traditional interventions like large-group CME programs such as traditional courses and annual general meetings, mailed materials in print format, and more innovative outreach-like programs.

Traditional CME methods

Several reviews of the literature of the effect of traditional CME interventions on physician performance and health care outcomes have determined that while they may be effective in transmitting knowledge, they produce less than adequate change in these dimensions. [8] These interventions - by and large didactic lecture-based conferences and mailed, unsolicited print materials - have been the mainstay of CME providers: they have come under increased scrutiny and even modification. For conferences, the modification process has included increased reliance on workshops, and interactive techniques using cases and increasing the relevance of the learning to the physician -techniques, which appear to be effective [9]. For mailed materials, the thrust has been to add self-assessment components, to distribute the materials by electronic means, and to give brief 'practice-point' summaries to facilitate learning.

Individualization in CME Needs Determination: the role of the advanced CPD provider

There are a number of initiatives, especially those related to heightened awareness of the need to individualize CME and CPD, in order to make it more relevant and effective. These methods have included self-assessment programs, community-based and practice-based initiatives.

Self-Assessment Programs

First, perhaps the earliest forms of needs assessment program have derived from traditional multiple choice examinations in undergraduate programs. Building on these, the American College of Physicians developed the Medical Knowledge Self Assessment Program [10]. While few studies have demonstrated the role of these SAPs in promoting physician performance change or patient outcomes, they have been demonstrated to improve knowledge, a necessary if not sufficient pre-condition for the former to occur. Second, there are new initiatives in the field of speciality societies, which enhance the individualization process. Generally termed learning diaries or learning portfolios [11], these methods permit physicians to record their questions while in practice and to develop a series of steps to help answer these questions.

Community-based initiatives

Community-based interventions, including academic detailing and opinion leader training have been demonstrated, more often than not, to change performance and patient care outcomes. Academic detailing, which uses pharmacists and other health professional as one-to-one educators of physicians have increased appropriate prescribe behaviour in certain instances [12]. In addition, opinion leaders, who are community-based and -identified educational influential clinical, similarly have been shown to improve compliance with guidelines [13, 14] among other items.

Practice based initiatives

Third, there are those interventions such as reminders and audit and feedback which have been implemented in the practice setting, and which show real signs of improving physician performance. In randomized controlled trials, reminders (either clipped to the patient record, or computer generated) about clinical care items such as prevention, prescribing, or follow-up have shown promise. Also showing promise, though of less immediate and somewhat less certain impact, is audit (a review of the physician's performance data) and feedback, in the form of a newsletter, meeting or computerized information. [15]

The third strand: creating a comprehensive program of CPD

How can we take the two strands currently available to us - the physician as learner and the work of the CPD provider - and meld them into a seamless program of effective learning and physician performance? The answer requires us to look at a merged view of the CPD of physicians - the third strand in a DNA-like model. In turn, there are several pieces to this complex puzzle: support for the learning process, assisting with determining needs, providing, directing and appraising learning resources and developing practice-integrated tools, and finally evaluating outcomes of the learning process – outlined by Mann and Gelula [16].

Supporting Natural Processes of Learning

There are two aspects, reflecting the strands already discussed, to the process of supporting the learning process - that related to the individual learner, and that related to the CPD provider.

First, understanding the processes of physicians' learning and change suggests that we must help learners identify gaps between their current knowledge or skills and what is desired, and second that we must help them to picture what the change will look like. One method of developing these goals is through the use of learning 'partners' as described by Charles Campion-Smith [17]. Here physicians work in pairs to assist each other with the development of goals and with other steps in the SDL process. Further, many physicians find the use of clinical traineeships (mini-residencies or preceptorships) useful. Here, physicians re-enter a training program to update a particular skill such as a surgical procedure, in a short space of time. Finally, there is evidence that developing 'communities' of learners, i.e., groups of physicians who study together, as in the McMaster small group learning projects, encourages and facilitates the learning process [7].

Though barriers to self-directed learning exist - within the physician learner, within the health care system, and with the CME provider - any of these processes can help to define their goals and plan a self directed learning plan.

Assisting with Determining Needs

Most physicians, whose undergraduate curriculum has been (largely) pre-set, have limited experience in self-assessment of learning needs. Indeed, there is clear evidence [18] that physicians often select topics in which they have some expertise and feel comfortable. Increasingly, however, tools exist for physicians to engage in ongoing, objective and periodic self-assessment. CME providers can help with means of systematically assessing needs, by reviewing charts or notes, utilization of resources, or patient outcomes. The CME provider can also assist with SDL both by raising the learner's awareness that unperceived needs may exist, and by making reliable and valid self-assessment tools available. Examples of these methods might include a practice audit, reflective

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diary or portfolio (listing questions or problems encountered on a daily basis), or multiple-choice tests.

Once the goals for the learning have been set, the physician-learner needs to develop a curriculum, i.e. a set of knowledge, skills and attitudes that are required to meet the goal. The CME provider can assist by helping to determine the content and sequence of the plan, and can 'coach' the physician-learner. This analogy of 'coaching' reflects the role for the CME provider in 'showing how', 'supporting', providing feedback on content progress, and the process of SDL, increasing the learner's sense of confidence in the process - just as coaches do in sports. Finally, the CME provider can help the learner by selecting outcomes. Such a process offers the important element of feedback, as well as the opportunity to plan a strategy and recruit environmental reinforces to inform and facilitate progress.

Providing Learning resources

Providing access to critically appraised, evidence-based learning resources is an important role of the CME provider. The process of selecting them can occur by applying criteria of the learner's preference(s), the availability and accessibility of the resource, and its effectiveness and efficiency relative to the learner's goals. Learners should be encouraged to select from both formal and informal CME resources (e.g. clinical traineeships; formal CME courses; home-study modules; study groups; on line study).

Achieving and evaluating Outcomes

Perhaps most difficult is the learner's task of selecting appropriate signposts of progress or markers that outcomes have been achieved. It is important for the provider to assist in the selection of outcomes that are relevant and valid indicators of change. Further, where the desired goal may be long-term, the learner may wish to attend to indicators along the way. Other outcomes may include the use of learning diaries in which the physician can assemble evidence of progress toward and achievement of goals.

Conclusion: the triple helix of learning

This brief paper has examined and expanded the notion of Nowlen that continuing education can be seen as a double-stranded helix - one strand representing the internal characteristics of the learner (his or her values, experiences and competencies), the other strand the culture and environment in which he or she practices and lives. The third strand proposed here may simply serve as a convenient conceptual model for testing and refinement.

Evidence suggests that we must first assist the learner to identify his/her own needs and learning path and help in the process of evaluating outcomes. Further, the evidence is clear that many traditional methods of education are ineffective unless modifications are made and that other methods 'closer' to practice – in the community, hospital or office setting – have more impact.

Despite this evidence, however, the "triple helix" still remains a model, an interesting device - untested and undeveloped. The model does however allow us to test systems for CME providers and to monitor their outcomes, and it permits us to raise awareness of further research questions. These include, among many others, the following: Can we foster SDL in undergraduate and postgraduate training? Can we tailor new methods in CME to match the individual needs and requirements of physicians?, and can we measure the impact of SDL and the new CPD?

A rich research and practical agenda awaits the thoughtful provider of CME: this model may help in that process

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