

Invited Paper

The Role of Educational Theory in Continuing Medical Education: Has It Helped Us?

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Abstract

Despite the existence of many approaches to understanding learning and change and attempts to incorporate these into continuing education research and practice, the search continues for a comprehensive understanding of how learning is engendered in professional practice and the processes by which learning and change occur. This article considers four broad questions in relation to the practice of continuing education: (1) What can be expected of theory? (2) How does theory relate to the educational practice of those in continuing education and the goals of continuing medical education? (3) How have practice and theory mutually informed our current understandings? (4) How can theory serve the field more effectively in the future? Broad orientations to understanding learning provide a framework for examining the contributions of theory and practice. The orientations include behaviorist, cognitivist, social learning, humanist, and constructivist; for each, an example is presented. Newer understandings also are introduced. The article concludes by considering reasons as to why theory appears not to have served us better and by offering ways in which those in continuing education can ensure greater usefulness of theory while contributing to its continued development.

Key Words: Continuing education, continuing medical education, educational theory

Introduction

“There’s nothing so practical as a good theory.”¹ Yet, more than 50 years after Kurt Lewin’s statement, the relationship of the field of continuing medical education (CME) with theory seems ambivalent at best. Many different theories and

models have been employed to understand and facilitate change in provider behavior, yet the results have been inconsistent.^{2,3} Perhaps our collective goal of a comprehensive theoretical base to understand physician behavior remains unrealized because of the complexities of professional practice.

The realization that we have not reached the goal leads some to question further the role of theory; however, it can also stimulate a thoughtful consideration of the gains that have been achieved and, possibly, of a renewed approach to using theory in our research and practice. The purpose of this article is to reflect on the following question: Has educational theory in CME helped us? To do so, four broad questions are considered. First, what can be expected of theory? Second, how

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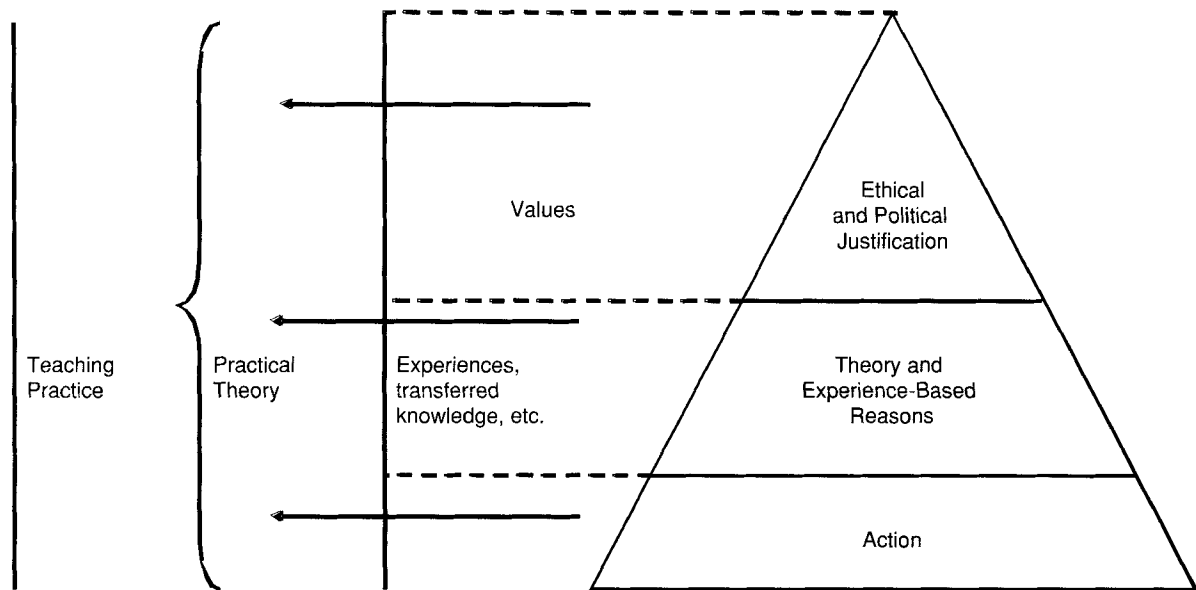


Figure 1 The practical theory of professionals. Adapted from Handal and Lauvas.⁴

does theory relate to our work and goals in continuing education? Third, how have practice and theory informed each other and, subsequently, our practice? Fourth, how can theory better serve the field in the future?

What Can We Expect of Theory?

To begin, it is useful to consider our assumptions about theory. Theories are systems and ideas explaining events and relationships using general principles that may apply independently and to the particular phenomena to be explained. We all hold such systems of ideas and assumptions about relationships in our everyday life; these relationships can be tested, can inform what we know, and can change our behavior, and the feedback we receive from our actions allows us to retest the relationships. Also, each of us holds beliefs about theory and about its usefulness in our professional life; in this case, those beliefs concern educational theory—whether we use it, whether it is useful to us, and whether we need it to do our work.

A brief reflection reveals that we use theory continually in our work as educators. We use it explicitly when we use the beliefs that we have about education to inform program design. For instance, a belief that people learn best if they are actively involved in learning leads to programs that allow for active involvement. We also use theory tacitly, without conscious awareness. For example, an assumption that learners must have knowledge before they can solve problems and that, once they have the appropriate knowledge, they will be able to make change may result in programs that emphasize knowledge transmission.

Theories are not found only in books; our own beliefs are incorporated as well. These examples illustrate our “practical theories of teaching,” a concept described by Handal and Lauvas.⁴ Although not all CME practitioners are actually involved in teaching, our assumptions about teaching and learning are clearly influential in our practice. Figure 1 represents their idea.

“Teaching practice” is seen in our everyday work, in interactions with learners, approaches to planning, evaluation, and assessment. Underlying

one's teaching practice is a "practical theory of teaching," that is, the beliefs, assumptions, and understandings that guide us in our teaching. Three main influences continually inform one's practical theory: (1) direct experience and the feedback that results; (2) what we have been taught, what we have read about theory, and the personal theories that have arisen from our experience over time as educators; and (3) our practice as educators, which is grounded in our values and ethical standards. Together these elements contribute to our dynamic and continual formulation and reformulation of theory.⁴

Educational theory includes a broad array of approaches or a set of lenses through which to understand our learners and optimize their learning. Theory does not provide a set of instructional tenets. Further, it concerns not just how learning occurs but also the strategies and the environments that are likely to affect learning.

Do we really need to understand theory to do what we do? The analogy of prescribing appropriate medication might be useful in considering this question. Based solely on being informed that it will work, a drug can be prescribed; however, to understand how that drug works, its interaction with other drugs, and the reasons why it might not work or to develop better drugs and therefore to improve patient care, knowledge about the drug and its mechanism of action is required.

Similarly, we can use educational interventions without understanding the conceptual frameworks or theories that they represent. However, to know how the intervention works and how it might interact with learners in a specific context requires more information so that the best approach can be selected. Further, to understand why interventions are not effective, to use that understanding to refine and improve interventions, and, ultimately, to improve our educational practice, some understanding is essential.

Laidley and Braddock⁵ describe three reasonable expectations of theory: (1) we can predict which educational approaches will be effective, (2) we can create a framework for evaluating our cur-

rent practices, and (3) we can use theory to create a framework for new, untested strategies that may be effective. Similarly, Grol and Wensing² describe theory as very important to explore potential incentives and barriers as new interventions are planned. Theory also can promote consistency in our work and educational practice.

How Does Theory Relate to Our Work and Goals in CME?

Theory relates to CME with three overarching goals: (1) to improve practice, leading to improved outcomes in health; (2) to improve learning; and (3) to support the maintenance of competence. Theory is important to understanding how physicians learn, understanding how change is incorporated, knowing how to plan interventions, and building better opportunities that facilitate and enhance natural processes of learning.

Critical to the discussion of theory and its contribution to continuing education is the relationship of theory to practice. Historically, theory seems to have been viewed as separate from practice, a formal set of rules that can be applied across many situations. From this perspective, when the effect is less or other than desired, there is an understandable tendency to consider theory unhelpful. An alternative perspective, however, views theory and practice as integrally related and mutually informing of one another. When viewed in this way, we see practice and theory in a dynamic feedback loop (Figure 2).

In practice, problems can be framed and questions can be thoughtfully raised about the real problems that practitioners face; theory can help bring some understanding to those problems. It can suggest tools and approaches to the problems raised. These solutions can then be thoughtfully applied in practice. Lastly, the effects of these approaches in practice can be carefully considered and new insights generated that lead to the refinement of theory. The feedback loop begins again. Viewing theory and practice as closely linked provides a critical new perspective from which to

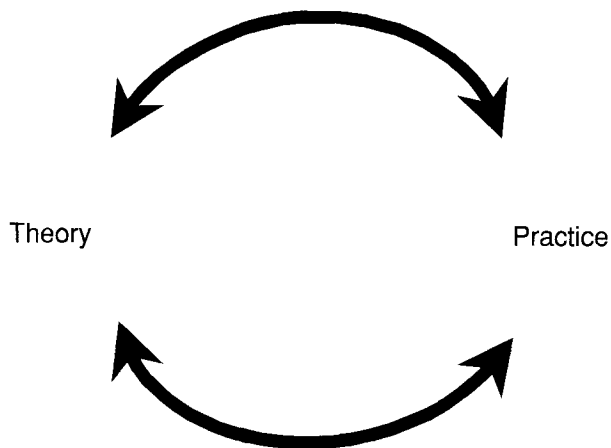


Figure 2 The critical relationship of theory and practice: a mutually informing, reflexive relationship.

consider the role of theory. This perspective can be explored by examining some selected aspects of educational theory for examples of how practice and theory have informed each other.

How Have Practice and Theory Informed Each Other?

Few would deny the existence of a bewildering array of approaches to understanding learning. These have been classified into groups based on similarities in underlying orientations and assumptions about learning.⁶ These include behaviorist, cognitivist, social learning, humanist, and constructivist approaches. The next section of this article briefly describes each of these approaches and presents examples of educational practices that have their basis in the orientation and examples to illustrate how theory and practice have informed each other.

Behaviorist theories assume that the environment influences and shapes behavior. They focus on observable behavior. The principles of contiguity and reinforcement are important. Examples found in educational practice include the systematic design of instruction, the use of behavioral objectives, competency-based education, skills training, and the use of feedback.

The use of feedback illustrates how theory has guided our work. Feedback speeds and increases the accuracy of learning. It also increases the level of goals that individuals set and achieve. Feedback recently has been incorporated into professional education as multisource feedback, providing physicians with information about their performance on a variety of competencies.⁷ The feedback is based on ratings of performance by colleagues, coworkers, and patients, in addition to a self-rating. As a result, there are now opportunities to learn important lessons from practice: What kind of feedback is helpful? What are the characteristics of effective feedback? How is feedback best provided so that practitioners are able to use it to improve their practice? Studies have begun to explore the impact on physicians who receive feedback and how that feedback is used.⁸

The cognitive orientation focuses on internal processes of perception, insight, and meaning. In contrast to the behaviorist orientation, cognitivist theories assume that the locus of control is with the learner. These theories attempt to explain the ways in which information is received, processed, stored, retrieved, and applied. Cognitive science has been a major contributor to growth and improvement in medical education, particularly at the level of undergraduate education. Cognitive theory highlights the importance of perceptions and the importance of knowledge that is appropriately organized. Cognitive theory also has illuminated how problem-solving skills are developed and how such skills are transferred from one situation to another. The importance of learning in a meaningful context also is drawn from cognitive theory.

Problem solving illustrates the contribution of theory to practice. The ability to frame and solve problems is central to physician competence. Initial work led to a theory of problem solving, in which there were general problem-solving skills that could be applied across many situations. However, experience in practice revealed that this was not so. The ability to solve problems is tightly tied to one's knowledge in that area; therefore, problem-solving ability varies markedly from case to case

and from context to context. These findings have led to new understandings and revised theories about promoting the learning of problem solving; we now understand that learners require a wide variety and number of opportunities and exemplars in learning how to solve problems so that they have many different problem-solving approaches from which to draw.⁹

The humanist approach to understanding learning views learning as the potential for human growth. It recognizes the developmental nature of humans and their responsibility and desire to become autonomous and self-directed. This approach has been widely influential in continuing education. The development of individuals toward autonomy, the importance of self-directed learning, reflective practice and critical reflection, experiential learning, transformative learning, and adult learning theory all have their roots in the humanist orientation.

Because it is so widely recognized in continuing education, adult learning theory deserves special attention. Knowles¹⁰ enumerated five characteristics of adult learners. Based on his studies of practice,

1. Adult learners move from dependence to self-direction in learning.
2. Adult learners have a rich reservoir of experience to apply to their learning.
3. Adult learners value learning that is relevant to their daily life.
4. Adult learners have a greater focus on problem-centered than on subject-centered learning.
5. Adult learners are motivated by internal rather than external motivators.

The principles of adult learning have informed many continuing professional development programs. However, questions remain about the validity of individual tenets.¹¹ Theory has led us to view self-direction as an inherent human characteristic,¹² yet practice repeatedly shows that adults in new situations are not consistently self-

directed.¹³ Instead, self-direction is developed gradually in all learners. The principle in question may have been interpreted too broadly; perhaps this is also true for other aspects of the theory. Another tenet of adult learning theory holds that adults are largely internally motivated. This has led to an assumption that learners will be motivated to learn without any external supports or reinforcement. Practice has shown that motivation is rarely exclusively either internal or external but that behavior is motivated by a mixture of external and internal motivation. In reality, much of workplace learning and continuing professional learning mandates participation. Thus, as Misch¹⁴ notes, “even if medical learners are internally motivated, they are also unquestionably externally motivated as well, not just by prestige, admiration, wealth and other inducements, but also by governmental and professional regulation.” Notwithstanding these controversies, adult learning has nevertheless helped the practice of continuing education in several ways: it has highlighted the ongoing learning of adults throughout their lives, the importance of the relevance of tasks and of learners being actively involved, and the fact that both content and the skills involved in adult learning have to be learned.

A critical area of theory relates to reflective practice and how professionals learn from experience. Schön's¹⁵ model of reflective practice is a widely recognized theory in continuing education. It developed from observations of practice across several professions of how professionals work and learn and frame and solve complex problems of practice. Schön identified a cycle of learning from experience, which has become very important in informing the kind of programs and learning opportunities that we strive to develop in effectively maximizing learning from practice. Examples include tools to promote reflection,¹⁶ such as diaries and reflective exercises now taking hold in undergraduate medical education. As yet, the evidence for the effectiveness of promoting learning through reflective practice is unclear, although it is proposed that reflec-

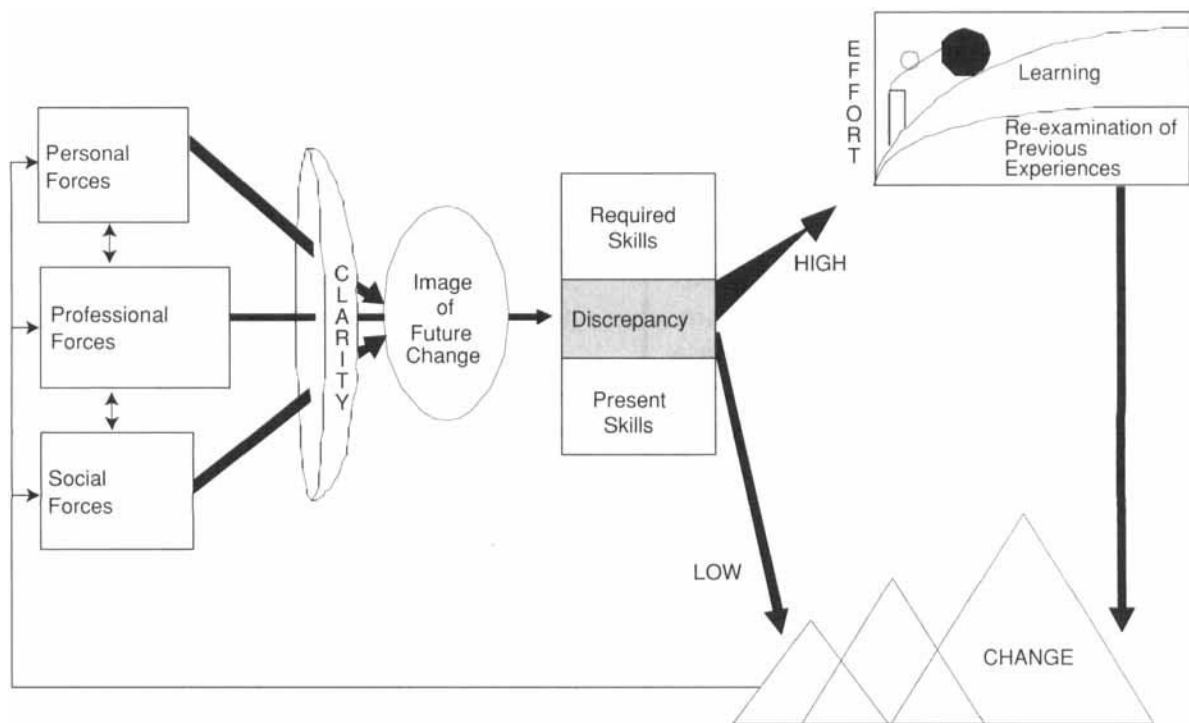


Figure 3 The process of change and learning. Reproduced with permission from Fox et al.¹⁹

tion assists the integration of new knowledge and experience.¹⁷

Theories with a social learning orientation focus on how learning occurs in interactions with others and the environment. This approach incorporates aspects of both behavioral theory and cognitive theory. Like the humanist approach, social learning accepts that individuals have the capability for self-regulation. Social learning also includes motivation and self-directed learning, focusing especially on the roles of goals and goal setting in affecting behavior change. Additionally, social learning theory has alerted us to the importance of learning through observation. The concept of role models serves as an example of how practice and theory have informed each other. Observational learning holds that although personal experience is still the most effective means of learning, individuals learn powerfully from watching others and observing the consequences of their actions.¹³ Practice has taught us that role models

are a powerful influence on learners. This has been the case particularly at undergraduate and postgraduate levels of education. In CME, this theory has informed our understanding and use of educational influentials. Practice has taught us that they serve as models for other members of the profession in changing behaviors and setting practice standards.¹⁸

No discussion of practice informing theory in CME could exclude the work of Fox, Mazmanian, and Putnam,¹⁹ who studied the process of change and learning in the lives of physicians. They interviewed more than 350 physicians to ascertain the kinds of learning activities that physicians undertake and the important factors in the process of learning and change. A model of change and learning was developed (Figure 3). Through this work and the studies that have validated it, an understanding of the process has been framed that moves from the forces to change through decision to change, preparing for, implementing, and main-

Lessons for Practice

- Theory and practice are integrally related and mutually inform each other.
- Theory provides important frameworks for understanding and addressing the problems of practice. In turn, practice serves to inform and revise theory.
- Theory can serve the field better if it is systematically applied and made explicit.
- Theory can assist in the planning, implementation, and analysis of continuing education programs.
- Through sharing knowledge and building new understandings, practitioners inform and refine theory.

taining change in practice. The model has helped educators understand at what points educational interventions can facilitate the process by which learning occurs in response to practice. It clearly illustrates how learning occurs in interaction with the environment and incorporates perceptions, experience, and goals.

The last theoretical approach to consider is constructivism, which asserts that learning is the process of constructing meaning and making sense of our experience, based on our past experience. Constructivism has served to facilitate analysis of the process of reflection and aided understanding of those opportunities in which individuals mutually develop their understanding of situations and build knowledge together. It informs the understanding of learning from experience and reflective practice and highlights the fact that individuals build their knowledge in very different ways. That is not to say that individuals have their own view of what knowledge is; every group has a core of mutually agreed-on knowledge. However, the

differences in the way in which knowledge is constructed and acquired are important in our recognition of how learning occurs from experience in practice.

An emerging area of theory that may hold great opportunity for practitioners in continuing education comes from anthropology and sociology and the study of sociocultural learning. The theoretical approaches discussed thus far in this article focus on how the individual learns, either alone or in interaction with others. However, theories and understanding are emerging that view knowledge as not only existing in the individual but also across individuals and in the community. An approach relevant to medical education is situated learning, as described by Lave and Wenger.²⁰ These authors studied many instances of apprenticeship, an educational approach that is pervasive in medical education, particularly in the levels that precede CME. In situated learning, learning is characterized by learners' ongoing participation in the community of their practice, in this case, the profession of medicine. Individuals learn from each other through conversations (learning "to" talk and learning "from" talk) and through participation in the work and practices of the community. New learners start from the periphery of that community, and as they move toward the center, they become more involved and assume more responsibility; as they become more involved, they not only learn from more senior members but also contribute to knowledge building. From this notion, the idea of communities of practice has emerged. To consider continuing education as occurring in communities in which educators and practitioners work together, share information, and build knowledge together offers us enormous opportunities. Grol and Wensing² suggested that a theoretical approach is needed to explain learning in the individual, the profession, the organization, and the system. The approach of learning in communities holds promise as a conceptual framework within which to develop that multilevel understanding.

In continuing education, situated learning offers opportunities for creating and fostering

learning communities, of which small-group problem-based learning is a seminal example. In Canada, 3,500 physicians are involved across the country, meeting regularly in small groups to discuss authentic problems of practice, in learning in which knowledge is shared and developed. Studies of the effectiveness of this approach continue. Wakefield et al. demonstrated that commitment to change strategies were effective in the context of small-group learning for family physicians.²¹

How Can Theory Better Serve the Field in Future?

Theory cannot serve our educational practice well if viewed as a set of rules separate from practice, to be applied proscriptively. Rather, theories grow and change, part of and guiding educational practice. Theory's iterative relationship with practice provides a powerful tool for improvement.

Why has theory not provided us with more answers to date? There may be several contributing factors. First, it may be impossible to move directly from theoretical principles to practice. Theory cannot proscribe directly what to do; however, it can provide the tools to look for crucial variables that might be involved. It cannot provide ready-made instructional prescriptions; however, it offers a framework within which to conceptualize issues of learning and teaching. Second, theory has not consistently been systematically applied in our work. In the presence of multiple models to guide interventions, theory has been applied eclectically and episodically, making it difficult to determine its true usefulness. Further, where theory has been used to guide research, when the research lacks rigorous design and implementation, we have been unable to draw conclusions about the effectiveness of either the intervention or of the theoretical or conceptual framework involved. Consequently, evidence for the effectiveness of some educational interventions is lacking and the accurate assessment of theory is hindered. Third, there has not been consistent careful reflection on the "theories-in-use" in

educational practice, and the conceptual and theoretical bases have not always been made explicit. In the complex situations that characterize professional practice, many variables are at play. Fourth, and very importantly, theory has not provided us with more answers because the assumptions and theories that we, as educators, use tacitly are invisible to us and assumed to be self-evident because they are embedded in our beliefs and assumptions.

Summary

Examining approaches to learning more closely allows a reflection on the overall contribution of theory to the practice of continuing education. Educational theory has helped the field of CME in several ways. It has helped us view the learner as an active contributor; it has highlighted the importance in learning of the entire learning context rather than a single variable; it has facilitated thinking about learning and relating solutions that are developed to real-life problems that practitioners face; and it has illuminated the importance of learners' past experience, the importance of their beliefs and attitudes, and their potential for self-regulation and self-direction. Lastly, theory has helped clarify that reflection on one's performance is critical to ongoing learning from experience.

For theory to serve the field optimally, multiple ways of understanding learning must be retained; there is a need for all of the theoretical lenses that can be brought to bear on this very complex and important topic. More systematic application of theory can support linkages that will advance the field. The field will benefit from more theory-based research, explicitly stating how theory is related to the questions asked.

It is essential for us, as practitioners, to reflect thoughtfully on our work and to theorize about our practice—how interventions have their effect and why they work in a particular way. As learners move across the continuum from undergraduate to postgraduate to continuing education, the distinctions are largely created by the system. Learn-

ers are not different as they cross the continuum; there is much to learn from the understanding of learning at other points on the continuum. The example of situated learning underlines the importance of linkages with and learning from other disciplines. Above all, however, is the relationship of practitioners with theory and practice. A mindful commitment to view them as integrally linked and mutually informing and to sharing ideas and building practice is critical. Thus, we may both develop better educational experiences for the physicians that we serve and also improve our practices as educators.

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