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EVIDENCE-BASED TEACHING PRACTICE: IMPLICATIONS FOR BEHAVIORAL HEALTH

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ABSTRACT: Educational practices and strategies have changed very little over the years, and even emerging advances in technology have become the prisoners of traditional academic norms. Thus, while there is increasing emphasis on evaluating and aligning caregiving processes with the strongest evidence of effectiveness, there is little demonstration or role-modeling of this same expectation in either the formal or continuing educational processes of behavioral healthcare providers. This ''disconnect'' is a significant problem in the field. This paper addresses the urgent need to inform the education and training of the behavioral health workforce with current theories regarding the teaching–learning process and evidence about the effectiveness of various teaching strategies. The relevant theories and available bodies of evidence are described, and the implications for workforce education and training are identified.

KEY WORDS: behavioral health; evidence-based teaching practice; learning theory; teaching strategies.

There is a growing awareness of the many problems that exist in the education of healthcare providers. The Institute of Medicine (IOM) report, *Health Professions Education: A Bridge to Quality* (Greiner & Knebel, 2003), asserts that today's healthcare workers are not being adequately educated or evaluated to ensure that patients receive safe, high-quality care. It recommends that academic programs in medicine, nursing, pharmacy, and other health fields adopt five key skills that all students must master: delivering patient-centered care, working in interdisciplinary

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teams, engaging in evidence-based practice that includes the latest research, applying quality improvement approaches to help reduce and report errors, and using information technology. A similar ''call to action'' has emerged in the education of the behavioral health workforce by the Annapolis Coalition on Behavioral Health Workforce Education (Hoge & Morris, 2002) and in the proceedings of a conference, Modern Psychiatry: Challenges in Educating Health Professionals to Meet New Needs, sponsored by the Josiah Macy, Jr. Foundation (Hagar, 2002). However, none of these reports focuses on how such learning should take place or what strategies will assure the attainment of the identified educational outcomes.

Becoming a teacher in behavioral health generally requires that one has a degree in a professional discipline (medicine, psychology, nursing, etc.). But being qualified in a professional arena does not automatically qualify one to be an effective teacher. More simply stated, a good clinician or researcher is not necessarily a good teacher. Most behavioral health educators have had no formal training or didactic learning about instructional processes, teaching strategies, or curriculum design. Furthermore, faculty members from professional disciplines tend to teach the way they were taught, and rarely access the extensive educational literature to inform and evaluate their role as educators. Thus, one will see clinical textbooks and journals lining the bookshelves of faculty, but seldom note the presence of a single journal or text dedicated exclusively to learning and teaching effectiveness. Furthermore, faculty members in a professional discipline and training staff in provider agencies and state departments of mental health are allowed considerable autonomy in deciding what and how to teach. Peer review and quality improvement methods are seldom implemented regarding educational processes and outcomes.

Most behavioral health educators have had no formal training or didactic learning about instructional processes, teaching strategies, or curriculum design.

Education in the behavioral health field is too often governed by traditions and intuitive beliefs that are neither grounded in theory nor empirically justified. There is a clear and pressing need for our educational programs and initiatives to draw on major theories of learning and the available evidence on effective education strategies (Van Der Vleuten, Dolmans, & Scherpbier, 2000). This is known in academia as evidence-based teaching practice (EBTP). If the body of knowledge in education

were used as the foundation for teaching behavioral healthcare providers, current teaching practices would change dramatically.

We begin with an overview of theories regarding teaching and learning, which can inform post-secondary education. This is followed by a summary of available evidence on effective teaching strategies, drawn from the areas of ''best evidence medical education,'' problem-based learning (PBL), continuing education, and distance education in the health professions. We conclude by highlighting the implications of learning theory and relevant research evidence to current efforts in training the behavioral health workforce.

THEORIES OF LEARNING AND TEACHING

Adult Learning Theory

Teaching is not the same as learning. For example, the most common method of teaching is to have a teacher stand in front of a group of learners and give a lecture. The implicit theory behind this practice is that the person who has knowledge in a certain area transmits it to those who lack the knowledge, with knowledge consisting of all of the information to which the learner has been exposed (Parini, 2004). However, this is a passive view of education. It negates the idea that learning occurs in a broader context and that in order to understand and use the new information, the learner needs to structure, organize, and integrate the information based on his or her previous knowledge and view of the world. This active view of learning is called *constructivism*, and it proposes that learners construct their new knowledge and are at the center of the educational process (Savery & Duffy, 1995).

Central to the constructivist view is the belief that learning occurs most effectively when it takes place in the context of solving a problem or finding a solution to a situation that is of immediate interest and relevance to the needs of the learner (Bain, 2004). Such problem-based learning and learning based on experience typically require an element of self-directed learning undertaken with the guidance of a teacher.

Another principle of constructivist theory is that learning takes place in environments that are more democratic than traditional teaching venues. Democratic environments view learning as a two-way, interactive, and negotiated process between teacher and learner. Teachers challenge learners to think, and learners challenge the tenets of teachers. Skills such as self-awareness, shared authority, conflict resolution, and non-punitive critique can emerge in clinical practice only if they are taught in one's own educational program (Prather & Jones, 2003).

This constructivist view is highly relevant to the adult learner. *Andragogy* is a term used by Knowles (1990, 1998) to describe his very similar theory of adult learning. He proposes that adult learning is driven by the learner's need to know (purposive behavior), the learner's self-concept (self-direction), the learner's experience (what is brought to learning), a readiness to learn (developmental appropriateness), an orientation to learning (PBL), and motivation. Knowles also identified two conditions that are necessary for adult learning: an atmosphere that promotes collaboration, mutual trust, respect, and mutual support; and a norm that calls on learners to actively participate in diagnosing their own needs, formulating their own learning objectives, designing and carrying out learning plans, and evaluating their own learning. He underscores the notion that the prime motivator to learn in adulthood is to be able to apply knowledge and skills to the solution of immediate problems. Thus, at the beginning of any teaching–learning encounter, adult learners will want to know the benefit they will derive from their learning efforts.

Faculty members from professional disciplines tend to teach the way they were taught.

Understanding the theory and principles that facilitate adult learning provides an important context for examining specific teaching strategies. For example, one needs to evaluate the learner's readiness to learn and how the teaching process actively engages the learner, provides meaning to the learner, activates the learner's previous knowledge, and helps the learner integrate the information to gain new insights and understanding. The answers to these questions suggest the obvious limitations of the lecture as a dominant teaching strategy and the potential importance of practices such as small-group work, learning by doing, working with real-life problems, and interactive exchanges.

The Theory of Learning Domains

Use of a specific teaching strategy in behavioral health education is influenced by the learning objectives to be achieved and the content to be addressed. It has been theorized that there are three broad categories or domains of learning: cognitive, affective, and psychomotor (Bloom, 1977; Krathwohl, Bloom, & Masia, 1969; Simpson, 1972). These are interdependent and can be experienced simultaneously.

- The *cognitive* domain is known as the ''thinking'' domain. Learning in this domain involves the acquisition of information and refers to the learner's intellectual abilities, mental capacities, and thinking processes. Teaching strategies most often used to stimulate learning in the cognitive domain include lecture, one-to-one instruction, and computer-assisted instruction. The goal is the acquisition of new knowledge.
- The *affective* domain is known as the ''feeling'' domain. Learning in this domain involves increasing internalization or commitment to feelings expressed as emotions, interests, attitudes, values, or beliefs. Teaching strategies most often used to stimulate learning in the cognitive domain include questioning, case studies, role-playing, simulation, gaming, and group discussion. The goal is to influence one's attitudes.
- The *psychomotor* domain is known as the ''skills'' domain. Learning in this domain involves acquiring motor abilities and the capabilities to perform perceptual-motor tasks. Teaching strategies most often used to stimulate learning in the psychomotor domain include performance, demonstration, and practice. The goal is to master new skills.

Realtively little focus in behavioral health education is dedicated to exploring the learner's beliefs, emotions, values, and attitudes.

The *cognitive* or knowledge domain of learning is the traditional focus of most behavioral health teaching, as educators feel more confident in the ''giving of information.'' Yet, *affective* learning is particularly important in the development of a value system, the evaluation of ethical issues in the caregiving situation (Ginsburg, Regehr, & Lingard, 2003), and in respecting the racial and ethnic diversity in the population groups served by behavioral health providers. In fact, many of the most challenging problems facing the behavioral health field fall into the affective domain. Issues such as stigma, the lack of integration of physical and mental health services, beliefs about the recovery model, the incarceration of people with mental illness, and mental healthcare disparities are all strongly related to the affective domain of learning. Unfortunately, relatively little focus in behavioral health education is dedicated to learning in the affective domain and the exploration of the learner's beliefs, emotions, values, and attitudes. However, it is well-known that attitudes and beliefs predict behavior.

So too, the *psychomotor* domain has direct implications for behavioral health education if ''skill building'' is expanded to include such skills as those requisite to forming a therapeutic alliance, mastering a model of psychotherapy, or providing culturally competent assessment and treatment. These areas of learning present more difficulties to the educator and thus receive less focused attention and evaluation in behavioral health educational programs. Yet, active learning methods and utilization of the stages-of-change model (Prochaska, DiClemente, & Norcross, 1992) in identifying readiness to learn new skills and commitment to actualizing change in one's own behavior can offer innovative ways for behavioral health learning in the psychomotor domain to occur (Humair & Cornuz, 2003). Such strategies should be an inherent part of behavioral health internships and supervision.

Theoretical Models of the Teaching-Learning Process

Too often, discussions about education have a narrow focus on the teacher and the act of teaching. As outlined in Table 1 (Hammick, 2000), education and training in healthcare is more appropriately viewed as a teaching–learning process with a broad range of desired outcomes, beginning with the learner's reaction to the experience, and ending with the impact of learner education on the health of the learner's patients.

Thus, the teacher and the act of teaching are only selected elements in a broader teaching–learning model that encompasses the following dimensions:

- *Who is the provider of the education?* What are the characteristics of the teacher, including background, knowledge, skills, educational training, culture, and previous experiences?
- *Who is the targeted audience?* What are the characteristics of the learner, including background, knowledge, skills, readiness for learning, culture, and previous experiences?
- *What is the desired outcome?* What are the learning objectives to be achieved?
- *What content needs to be learned?* What knowledge or information is to be exchanged?
- *What will facilitate the learning of the identified content?* Which specific teaching strategies (e.g., lecture, demonstration, role-play) and which teaching tools (e.g., handouts, slides, videos) will be most effective and efficient in achieving the learning objectives?

TABLE 1
Educational Outcome Measures

Level 1: *Learners' reaction*	These outcomes relate to participants' views of their learning experience and satisfaction with the program.
Level 2a: *Modification of attitudes/perceptions*	Outcomes here relate to changes in reciprocal attitudes or perceptions, between participant groups, and towards patients/clients and their condition, circumstances, care, and treatment.
Level 2b: *Acquisition of knowledge/skills*	For knowledge, this relates to the acquisition of concepts, procedures, and principles of interprofessional collaboration. For skills, this relates to the acquisition of thinking/problem-solving, psychomotor, and social skills linked to collaboration.
Level 3: *Change in behavior*	This level covers behavioral change transferred from the learning environment to the workplace by modifications in attitudes, perceptions, or the application of newly acquired knowledge or skills.
Level 4a: *Change in organizational practice*	This relates to wider changes in the organization/delivery of care, attributable to an education program.
Level 4b: *Benefits to patients/clients*	This final level covers any improvements in the health and well-being of patients/clients as a direct result of an education program.

Note. From Hammick, M. (2000). Interprofessional education: Evidence from the past to guide the future. *Medical Teacher, 22*(5), 461–467.

- *How will one know that the content has been mastered by the learner?* What competencies are to be demonstrated by the learner at the completion of the educational program, and how will they be measured?
- *What is the impact of the learned competencies on patient healthcare outcomes?* Does learner acquisition of new knowledge and skills translate into improved health status among consumers?

In this model, teaching effectively is a learned skill requiring knowledge of this educational process, mastery of the instructional methods,

TABLE 2
Characteristics of Teaching Strategies

Strategy	*Domain*	*Learner role*	*Teacher role*	*Advantages*	*Limitations*
Lecture	Cognitive	Passive	Presents information	Cost-effective, targets large groups	Not individualized
Group discussion	Affective, cognitive	Active—if learner participates	Guides and focuses discussion	Stimulates sharing ideas and emotions	Shy or dominant member
One-to-one instruction	Cognitive, affective, psychomotor	Active	Presents information and facilitates individualized learning	Tailored to individual's needs and goals	High levels of diversity, labor-intensive, isolates learner
Demonstration	Cognitive	Passive	Models skill or behavior	Preview of ''exact'' skill/behavior	Small groups needed to facilitate visualization
Return demonstration	Psychomotor	Active	Individualizes feedback to refine performance	Immediate individual guidance	Labor-intensive to view individual performance
Gaming	Cognitive, affective	Active—if learner participates	Oversees pacing, referees, debriefs	Captures learner enthusiasm	Environment too competitive for some learners

Simulation	Cognitive, psychomotor	Active	Designs environment, facilitates progress, debriefs	Practice ''reality'' in safe setting	Labor-intensive, equipment costs
Role-playing	Affective	Active	Designs format, debriefs	Develops understanding of others	Exaggeration or underdevelopment of role
Role-modeling	Affective, cognitive	Passive	Models skill or behavior	Helps with socialization to role	Requires rapport
Self-instruction	Cognitive, psychomotor	Active	Designs package, gives individual feedback	Self-paced, cost-effective, consistent	Procrastination, requires literacy
Computer-assisted instruction	Cognitive	Active	Purchases or designs program	Immediate and continuous feedback, private, individualized	Costly to design or purchase, must have hardware
Distance learning	Cognitive	Passive	Presents information, answers questions	Targets learners who are at varying distances from expert	Lack of personal contact, accessibility

Note. From Bastable SB. (2003). *Nurse as educator* (2nd Ed.). Sudbury, MA: Jones and Bartlett.

and an ability to use these methods with a variety of learners and settings. In Table 2, Bastable (2003) informs this process by outlining the relationship between selected teaching strategies, the domains of learning, and the learner and teacher roles.

Evidence on Learning Theories

Proponents of adult learning theory avidly endorse its associated teaching practices. However, there is considerable controversy regarding the basis of these practices in sound, empirical evidence (Brookfield, 1993; Kerka, 2002, Misch, 2002). Research in this arena has been criticized for being primarily descriptive in nature. For example, Rose (2000) has argued that leafing through American adult education journals leaves ''one struck by the emphasis on reflection and theory and the seeming retreat from the use of data, in any form at all.'' Within the context of behavioral health training, almost no literature exists on evaluating educational strategies related to the cognitive, affective, or psychomotor domains, each of which appear to have an important role in the teaching of future providers. While much of adult learning theory and its associated teaching practices may ultimately prove to be valid, its evidence base is currently limited at best (Newble, 2002).

The validation of adult learning theory and the development of scientifically-based teaching practices have been hindered by a number of forces. Education research itself has long been under-funded by federal and state governments relative to its investment in other areas of science, such as treatment efficacy and drug development and testing (Fleischman, James, & Rotherham, 2003). The limited dollars that are allocated to educational research more often target the primary education of *children*, since that topic is a passionately debated and politically charged national policy concern. Conversely, there is a general lack of public interest in the higher education and ongoing education of *adults* (Rose, 1999). Furthermore, educational research is complicated by ethical and practical considerations, which are common in the social science arena. These include methodological issues around random assignment, control of confounding variables, maintenance of fidelity to planned interventions, and questions about the generalizability of findings from experimental studies to routine teaching environments (Rose, 1997).

Research efforts in the area of self-directed learning (SDL) are illustrative of the complexities. SDL is a process through which learners take increasing responsibility for their own education, its direction, and its relevance to their everyday lives, needs, and interests (Davies, 2000). This often involves adults setting their own learning goals, locating appropriate resources, deciding on particular learning methods, and evaluating

personal progress (Brookfield, 1986). While SDL is among the more productive areas of educational research, the body of evidence on this approach has been criticized for its methodological limitations. For example, the reliability and validity of the most widely used scale for assessing ''readiness'' for self-directed learning has been called into question (Field, 1991). In addition, the SDL approach tends to emphasize the values of individuality, separation, and competition (Brookfield, 1995). These ethical and philosophical considerations have yet to be adequately addressed, as research has failed to explore the extent to which self-directedness is culturally learned, based in personality, or inspired by teaching methods (Brookfield, 1993). In summary, while adult learning theory and related approaches such as SDL are well grounded theoretically (Newman & Peile, 2002), their evidence base is limited, and they are perhaps best thought of as models or sets of assumptions about learning (Newble, 2002).

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EVIDENCE-BASED TEACHING PRACTICE

Although healthcare faculty members are increasingly trained to make clinical decisions based on available evidence, when they put on their teacher's hat they seem to abandon their critical thinking about ''what works.'' For example, a search of the databases using the descriptors of behavioral health education, evidence-based teaching, and teaching strategies in behavioral health yields almost no articles. A few articles theoretically support reflective learning (Boyd & Fales, 1983; Welsh & Lyons, 2001) and the importance of teaching critical appraisal skills (Parkes, Hyde, Deeks, & Milne, 2002). The largest body of literature, which is only tangentially relevant, addresses the teaching of evidence-based practice in medicine (Davis & Taylor-Vaisey, 1997; Ghali, Saintz, Eskew, Gupta, Quan, & Hershman, 2000; Hatala & Guyatt, 2002) and the teaching of evidence-based practice in the behavioral health field (Bilsker & Goldner, 2000; Crawford, Brown, Anthony, & Hicks, 2002; Howard, McMillen, & Pollio, 2003; Rycroft-Malone, Harvey, Kitson, McCormack, Seers, & Titchen, 2002; Stuart, 2001; Taylor & Warner, 2000; Thomas, Cullum, Rousseau, Soutter, & Steen, 2003).

Most of this literature is descriptive in nature and does not evaluate the process or outcomes of teaching these evidence-based practices. Similarly, there is a body of literature focused on inter-professional education (Hammick, 2000; Lary, Lavigne, Muma, Jones, & Hoeft, 1997), but the existing studies lack the methodological rigor needed to convincingly understand the impact of inter-professional education and professional practice on healthcare outcomes (Zwarenstein, Reeves, Barr, Hammick, Koppel, & Atkins, 2003).

This deficit in the published literature is striking. It suggests that problems in educating healthcare professionals may not be limited to *what* they are taught, but extend to *how* they are taught. Even if faculty members in professional disciplines are teaching the appropriate evidence-based practices, the strategies that they are using may not be the most effective to facilitate the learning of these practices.

Furthermore, most credentialing and certifying examinations for practice as a behavioral healthcare provider are limited to assessing knowledge in the cognitive domain, with little attention focused on learning in the affective domain, changes in learner behavior, or improved clinical health outcomes as a product of practitioner learning. There is also substantial literature on the relatively weak link between performance in examinations and actual changes in clinical practice (Harden, Grant, Buckley, & Hart, 1999). Hence, there is no guarantee that those who score better on exams will translate that knowledge into improved clinical care or patient outcomes.

BEST EVIDENCE MEDICAL EDUCATION (BEME)

Despite the lack of a rigorous empirical foundation to current teaching practices, there are increasing research efforts underway to document those practices that do and do not lead to skill acquisition, a change in the learner's practice, and enhanced healthcare outcomes. For example, in response to growing concern that medical teachers often lack knowledge and evidence about contemporary approaches to education, the Association for Medical Education in Europe strongly recommended in August 1999 that medical teachers worldwide should launch an initiative to promote the expansion of ''best evidence medical education,'' or BEME (Hart & Harden, 2000).

BEME was defined as ''the implementation by teachers in their practice of methods and approaches to education based on the best evidence available'' (Harden et al., 1999). The BEME initiative has been stimulated by a growing international recognition that medical practitioners

and researchers base decisions largely on empirical evidence, while medical *teachers* frequently rely on tradition and intuition, much of which is not supported when they are submitted to empirical verification (Van Der Vleuten et al., 2000).

The BEME collaboration works in concert with other groups such as the Cochrane Collaboration in Evidence-Based medicine to prepare, maintain, and disseminate systematic reviews of effective educational interventions. As relevant research findings have been gathered in the context of the BEME initiative, the following teaching implications have emerged from reviews of the research (Van Der Vleuten et al., 2000):

- Teaching in isolation and requiring students to ''cram'' and memorize for examinations should be eliminated. Such programs tend to reinforce short-term knowledge and a surface approach to learning. Unused knowledge rapidly decays over time.
- The learning and the application environments should be as similar as possible (known as ''context-specific'' learning). Knowledge acquisition and application should preferably take place at the same time.
- Exercises in the application of knowledge should be repeated in numerous and varied situations.
- Less is sometimes more. While there is often an assumption in education that the more one teaches, the more students learn, this is erroneous and has been disproved by empirical research (Van Der Drift & Vos, 1987; Gijselaers & Schmidt, 1995). Optimum learning appears to be achieved when approximately 40% of the time available for learning is dedicated to teaching activities, and the remaining 60% is reserved for self-study. Beyond this level of planned teaching activity, learning actually begins to decrease, a finding that has significant implications for professional training programs, which tend to emphasize extensive, formal instructional activity.
- Teachers should focus on PBL, since acquiring knowledge through a professional problem or situation leads to more accessible knowledge.

PROBLEM-BASED LEARNING (PBL)

Both within and beyond the BEME collaboration, the topic of PBL has become the focus of significant debate among researchers and practitioners alike, given the extent to which this approach now influences medical

school curriculums. Walton and Matthews (1989) differentiated PBL from traditional teaching strategies in the following ways: (1) *curricular organization* is around problems rather than disciplines; (2) the *learning environment* makes use of small groups, tutorial instruction, active learning, independent study, and relevant ''problems''; and (3) *teaching outcomes* focus on skill development, learner motivation, and abilities for life-long learning. While PBL has been advocated in a number of reports (Login, Ransil, Meyer, Truong, Donoff, & McArdle, 1997; Peters, Greenberger-Rosovsky, Crowder, Block, & Moore, 2000; Williams, Sewell, & Humphrey, 2002), there appear to be differing opinions about its merits (Woodward, 1996).

The results of three systematic reviews of PBL generally support the superiority of the PBL approach over more traditional academic methods (Albanese & Mitchell, 1993; Berkson, 1993; Vernon & Blake, 1993). However, these reviews are considered dated and difficult to interpret due to methodological limitations of the studies selected for inclusion (e.g., the use of non-comparable sample groups, single-group post-test designs, and non-objective outcomes measures lacking established reliability and validity; Newman & Flemming, 2004). The limitations of existing research and reviews on PBL have led some to call for appropriately designed controlled trials. In addition, some argue that the superiority of PBL over didactic learning methods has never been rigorously tested using an evidence-based approach (Hart & Harden, 2000).

SDL [self-directed learning] is a process where learners take increasing responsibility for their own education, its direction, and its relevance to their everyday lives.

In an effort to respond to this call, the Project on the Effectiveness of Problem-Based Learning has been established under the direction of Mark Newman of Middlesex University in the UK. This project involves two separate but related research studies. The first is a randomized and controlled trial of PBL utilizing two advanced, graduate-level courses for nurses. The second is a systematic review of the evidence on the effectiveness of PBL that will be registered with the international Cochrane/Campbell collaborations and conducted in accordance with their standards. A preliminary report from a systematic review of available studies has established that the limited, high-quality evidence available from existing reviews does not currently provide *robust* evidence about the effectiveness of PBL in different contexts with different student groups. A number of conceptual, methodological, and practical problems still need to be addressed in the context of the full review before the

evidence base of PBL can be thoroughly assessed. For the moment, we must consider the evidence for the effectiveness of PBL to be mixed.

CONTINUING EDUCATION

The existing literature on evidence-based teaching strategies is largely drawn from research on continuing education, rather than formal education, in health professions. The focus here is on the outcomes of changing clinician behavior, and improving healthcare outcomes. While the number of studies in this area has increased over the past decade and the rigor of these studies continues to improve, few studies specifically examine the cognitive, affective, or psychomotor domains of learning. As a result, research in this area is somewhat atheoretical, focusing on changing behavior without adding to the knowledge base about the process of learning.

One of most important findings from these studies is that the most frequently used educational techniques have little impact on a clinician's behavior and essentially no effect on healthcare outcomes. These teaching strategies are passive, non-interactive approaches that include didactic lectures, single session presentations and workshops, and providing written handouts, audio-visual materials, or electronic publications to the learner. While these educational techniques may increase knowledge and skills or ''prime'' an individual to engage in certain professional behaviors, there is no significant evidence that these strategies increase the frequency of these behaviors (Mazmanian & Davis, 2002). This finding is important, given that these approaches continue to dominate continuing education programs in healthcare. In addition, faculty members teaching many of these continuing education programs are the same individuals teaching in undergraduate and graduate behavioral health programs who use the same untested teaching strategies and tools.

The research literature on continuing education does suggest that numerous individual educational strategies have a positive effect on provider behavior and, with less frequency, on the care of consumers and their health status (Bauchner, Simpson, & Chessare, 2001; Davis & Taylor-Vaisey, 2001). These interventions are outlined as follows:

- *Interactive Sessions.* Active involvement as opposed to passive participation of the healthcare provider in the educational process has been associated with greater changes in the learner's behavior (Davis, Thomson O'Brien, Freemantle, Wolf, Mazmanian, & Taylor-Vaisey, 1999; Thomson O'Brien, Freemantle, Oxman, Wolf, Davis, & Herrin, 2003). Included in these active approaches are educational

strategies such as role-playing, discussion groups, and experiential exercises that revolve around problem solving.

- *Outreach Visits or Academic Detailing*. In these interventions, a trained person or expert meets with a provider in their work setting and offers information that is intended to shape practice patterns. The process of ''detailing'' has been used extensively by the pharmaceutical industry in an effort to influence the prescribing practices of physicians. ''Academic detailing'' is a modification of this approach where academicians employ detailing techniques to shape clinical decision-making, quality of care, and cost-effectiveness of treatment (Soumerai, 1998; Soumerai & Avorn, 1990).
- *Reminders*. In this educational approach, prompts to perform a clinical intervention are given to the learner. The prompts may involve a reminder to perform a screening, offer preventative services, or schedule follow-up visits (Thomson O'Brien, Oxman, Davis, Haynes, Freemantle, & Harvey, 2003). They are delivered most efficiently through computerized systems, but can also be delivered manually.
- *Audit and Feedback*. This strategy entails periodic audits or reviews of a provider's professional practice. A summary of the findings is offered to the learner as feedback, possibly in the form of a peer comparison or provider profile. The feedback may or may not be accompanied by recommendations to guide the provider's future clinical practice (Borgiel et al., 1999).
- *Opinion Leaders*. In the first phase of this intervention, local practitioners identify influential peers as ''opinion leaders.'' These opinion leaders are then recruited to educate colleagues and influence their practice patterns through either formal or informal ''educational'' interactions. Studies indicate that local opinion leaders have mixed effects on professional practice, so further research is needed to determine when they are likely to influence the practice of their peers (Thomson O'Brien, Oxman, Haynes, Davis, Freemantle, & Harvey, 2003).
- *Patient Mediated Interventions*. This approach, occasionally referred to as an ''enabling intervention,'' involves indirect efforts to shape the behavior of a professional by contacting the patients of the professional. These contacts are made by individuals other than the provider being influenced. The content of these contacts might focus on the provision of educational materials or on the collection of patient information that is subsequently given to the provider to inform and shape the provider's approach with the patient.
- *Social Marketing*. This educational strategy involves an attempt to identify and anticipate the barriers to change in provider behavior. As a first step, prospective ''students'' are interviewed in order to

identify likely barriers or sources of resistance to planned teaching efforts. Subsequent teaching or training then incorporates specific interventions that are intended to address the anticipated resistance or barriers to both learning and behavior change.

In summarizing this research literature, Oxman and colleagues (1995) concluded that there are no ''magic bullets'' for teaching providers and producing change in their professional behavior. This conclusion was based on the fact that the effects of the educational strategies listed above are inconsistent with different types of providers, practice settings, and targeted professional behaviors (Mazmanisn & Davis, 2002). In addition, the changes in provider behavior produced by these interventions, while occasionally moderate in terms of their effect size, are generally small (Davis, Thomson, Oxman, & Haynes, 1995).

The research suggests that when used in isolation, the impact of a single intervention is usually either modest or negligible. However, the effect on provider behavior may become ''cumulative and significant'' when multiple interventions are combined (Oxman et al., 1995). Davis and colleagues (1995), in a review of systematic studies of continuing education, reported that 64% of interventions using any two of the educational techniques outlined above produced positive changes in provider behavior, while combining three of more of these interventions produced a change rate of 79%. To teach effectively, the evidence argues for using multiple teaching strategies, in a longitudinal and sequenced approach. Sequenced activities generally follow a ''learn, work, learn'' pattern, where didactic instruction is paired with experiential exercises.

EVIDENCE FROM DISTANCE EDUCATION

The use of distributive technology has recently emerged as an important teaching strategy. There is growing popularity of computer-based learning, online learning, e-learning, distance learning, and enthusiasm for the perceived promise these strategies offer for education and training (American Federation of Teachers, 2000). Technology is a tool that can enhance the teaching–learning process. Its potential benefits include cost-effectiveness, convenience, self-pacing, learner control, interactivity, and worldwide community (Stangler, 2000). At present however, there is a limited research base on the effectiveness of this educational approach

with health professions, and benchmarks for best practices in web-based courses are needed in higher education (Billings, Connors, & Skiba, 2001; Whitis, 2001). The one thing that distance education has done is to force a closer examination of the teaching practices in higher education, regardless of whether the teaching is done at a distance or in a classroom. Perhaps research related to distance learning environments, where online collaboration and discussion play a central role, will serve to inform current discussions about adult learning theory.

The most frequently used educational techniques have little impact on a clinician's behavior and essentially no effect on healthcare outcomes.

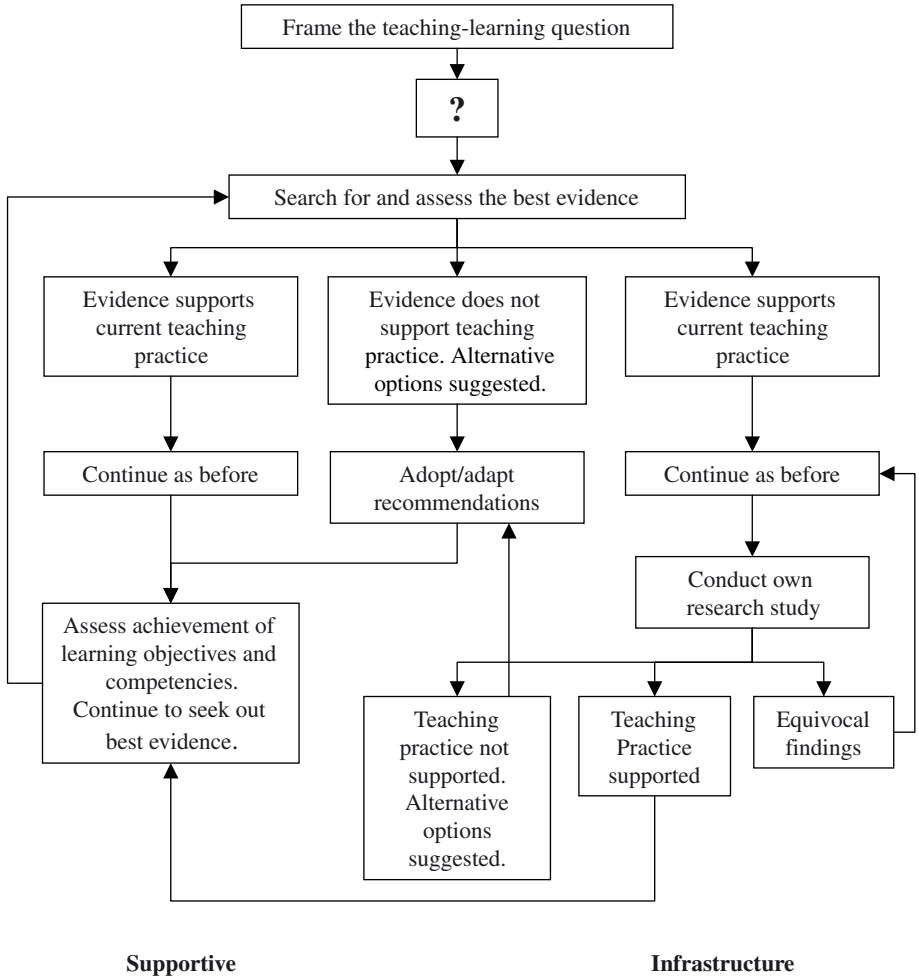
DISCUSSION

At present, teaching in behavioral health does not appear to be informed by either theories of learning or the evidence on the effectiveness of teaching strategies. Educators in our field urgently need to alter this situation by informing their approaches to teaching with the principles of adult learning, theories regarding domains of learning, and a shift in focus from teaching to the teaching–learning process.

However, we must recognize that much of the theoretical work on learning remains largely untested or unproven through research. While in clinical practice we have begun to enter the ''brave new world of evidence-based life'' (Wolf, 2000), there has been considerably less discussion about the content, process, and outcomes of teaching evidence-based treatment practices to healthcare providers (Norman & Shannon, 1998). Despite the enormous changes in the delivery of behavioral healthcare, educational practices and strategies have, in fact, changed very little. Even emerging advances in teaching technology that utilize the Internet have become prisoners of traditional academic norms. While there is increasing emphasis on evaluating and aligning caregiving processes with the strongest evidence of effectiveness, there is little demonstration or role-modeling of this same expectation in the educational process (Stuart, Burland, Ganju, Levounis, & Kiosk, 2002).

There is a clear and pressing need for those teaching in the behavioral health field to adopt an evidence-based approach to their teaching strategies (Hart & Harden, 2000). The functional components of a system for gathering and using evidence in behavioral health education should

FIGURE 1
Evidence-based Teaching Practice



be based on the EBTP model, which includes the following steps (see Figure 1):

1. *Frame the Question.* In general, this will involve asking how some element of the teaching–learning process impacts desired educational outcomes.
2. *Search for and Assesses Evidence that Bears on the Question.* Behavioral health educators need to be aware of the search strategies and information sources that are available to address questions regarding educational effectiveness. While such strategies and sources have

long been evident in the work on clinical evidence by international groups such as the Cochrane Collaboration in Evidence-Based Medicine, parallel efforts have recently emerged in the educational arena (Harden & Lilley, 2000). For example, experience gained in the Cochrane Collaboration has extended to the work of the Campbell Collaboration, an international workgroup devoted to the preparation, maintenance, and promotion of systematic reviews of research on educational interventions (Belfield, Thomas, Bullock, Eynon, & Wall, 2001; Harden & Lilley, 2000). Along with the U.S. Department of Education, the Campbell Group has established the web-based What Works Clearinghouse, which will catalogue systematic research reviews and become a major resource for those seeking evidence regarding the efficacy of educational interventions.

3. *Apply the Evidence*. This is often the most challenging step, as there are multiple obstacles in applying the knowledge about evidence-based teaching strategies in the education of the behavioral health workforce. These obstacles may include a general resistance to change among teachers, a specific opposition to content needing change based upon emerging evidence, the priority given to research and clinical practice in academic settings, the lack of recognition for teaching as a science in its own right, the discounting by teachers of negative learner evaluations, the absence of rewards for teaching excellence, the lack of alignment between teaching excellence and criteria for promotion and tenure, the lack of clarity about interdisciplinary roles, and insufficient resources and support for educational activities. Real change toward evidence-based teaching strategies will require an infrastructure to support its inception and ongoing practice, an efficient system of information dissemination on effective practices, championing from influential opinion leaders in the field, a supportive network of peers, and opportunities for collaboration with others interested in evidence-based education. External pressure applied by national accrediting bodies, licensing authorities, and prestigious educational or professional associations would also be helpful, but there are serious questions about whether such bodies would demonstrate leadership in this arena.
4. *Evaluate the Change*. The success or failure of all educational interventions must be evaluated after they are implemented. Such evaluations should assess the effectiveness and efficiency with which the desired educational objectives were achieved. Data from the learners, their peers, and their patients can inform the evaluation process and suggest new opportunities for growth in competent, evidence-based teaching.

While much more evidence is needed, existing theories and the available evidence on effective teaching strategies provide direction for reshaping current approaches to the education and training of the behavioral health workforce. We must abandon our excessive reliance on didactic and other non-interactive approaches that have been proven ineffective, and begin to employ and evaluate innovative strategies drawn from theory and research. We must embrace the brave new world of evidence-based teaching.

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