Dental Education and Evidence-Based Educational Best Practices: Bridging the Great Divide

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Abstract: Research about educational best practices is negatively perceived by many dental faculty. Separation between teaching and learning strategies commonly employed in dental education and evidence-based educational techniques is real and caused by a variety of factors: the often incomprehensible jargon of educational specialists; traditional academic dominance of research, publication, and grantsmanship in faculty promotions; institutional undervaluing of teaching and the educational process; and departmentalization of dental school governance with resultant narrowness of academic vision. Clinician-dentists hired as dental school faculty may model teaching activities on decades-old personal experiences, ignoring recent educational evidence and the academic culture. Dentistry’s twin internal weaknesses—factionalism and parochialism—contribute to academic resistance to change and unwillingness to share power. Dental accreditation is a powerful impetus toward inclusion of best teaching and learning evidence in dental education. This article will describe how the gap between traditional educational strategies and research-based practices can be reduced by several approaches including dental schools’ promotion of learning cultures that encourage and reward faculty who earn advanced degrees in education, regular evaluation of teaching by peers and educational consultants with inclusion of the results of these evaluations in promotion and tenure committee deliberations, creating tangible reward systems to recognize and encourage teaching excellence, and basing faculty development programs on adult learning principles. Leadership development should be part of faculty enrichment, as effective administration is essential to dental school mission fulfillment. Finally, faculty who investigate the effectiveness of educational techniques need to make their research more available by publishing it, more understandable by reducing educational jargon, and more relevant to the day-to-day teaching issues that dental school faculty encounter in classrooms, labs, and clinics.

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It is no surprise that practicing dentists, relying on scientific research for clinical validation and with increasing work responsibilities, may not be familiar with advances in educational research. On the other hand, it is notable that many full-time academic dentists are also unaware of the benefits of educational research and its findings (and may even avoid such research), as if dental schools are other than dynamic and evolving educational institutions.1,2

Content-enriched and technologically sophisticated health professions often draw upon seasoned and willing practitioners to teach in educational settings, but the bridge between effective practice and effective teaching can be wide.1,3 We have all experienced circumstances where a fine clinician did not necessarily teach well—and vice versa. These faculty members rely, pedagogically, on their thirty years of practice experience and teach (lecture) as they once learned. “Traditional” practitioner faculty may see themselves as providing “expert” experience delivered in a typical teacher-centered, passive learning environment, offering the prospect of maximum classroom control. These faculty may be less inclined, and more resistant, to change their approach to one of active student learning.

Reliance on expert clinicians to teach is understandable and necessary for most health care education. However, such reliance, without an institutional or administrative emphasis on a dynamic and coherent educational philosophy, can lead to factionalism, which can diminish the overall student educational...
experience. A dental school curriculum, for example, could lose some of its educational potential if faculty were divided in their commitments to current dental teaching and learning strategies that recognize new pedagogical approaches.

Facilitating a change in learning culture from the traditional dental school focus on “managing information and technological skills transfer” to one of active, independent learning by engaged students challenged to critically integrate biomedical sciences to clinical dentistry is an onerous task, let alone an agreed-upon direction for the profession. However, this shift to active learning, long recognized as a key component of adult and higher education, is inevitable.4-10

The purposes of this article are to 1) discuss the reasons for the disconnect between much of current teaching and learning methods in American dental education and the findings from research about educational strategies, and 2) offer perspectives about how to incorporate educational best practices into dental education.

Educational Divide: Etiology

One may question the reality of a dental education-higher education gap. At least based on sponsorship and physical proximity, health professions education in the nation’s more than 100 academic health centers is clearly part of higher education. Yet multiple points of evidence suggest the opposite.

For one, the unique jargon, often called “educantese,” of curriculum specialists and educational psychologists creates a barrier to acceptance by many teachers. As Peterson states, “Educators do not always help their cause by the ways in which ideas are communicated.”1 Common dental administrative and faculty references to “edu-babble,” “gobbledygook,” and “touchy-feely” in describing educational concepts are simply out-of-hand rejection devices reflecting lack of comprehension of underlying theories about how learning occurs and much of cognitive science (p. 124), which is now completely intertwined with sophisticated neurophysiology research conducted with advanced brain imaging technology. Second, the suspicion lurks with health professions faculty that educational research methodology is “soft” relative to “hard” science because randomized controlled trials are rarely used to assess instructional techniques. A further complication is that educational outcomes are, by nature, difficult to evaluate and not detectable for years.2,3

As Peterson and Bland et al. further confirm, “Some very good [educational] work is done, but clinical teachers still don’t seem to know about it. Major journals publish little on the subject. Electronic search using keywords ‘education’ or ‘medical education’ yields only a small number of studies that have been published in high profile journals,” such as Journal of the American Medical Association (JAMA) or the New England Journal of Medicine.1,3

Abrahamson notes that “the academic community is composed of individuals who ‘wear the hat’ of members of a discipline (biochemistry, [endodontics, orthodontics]); they do not wear the hat of practitioner of education (teacher, counselor, curriculum-planner). The fact that faculty members identify primarily as members of a discipline and secondarily as members of a faculty is of extraordinary significance in its effect on the curriculum and instruction” in a health professions school (pp. 66-70). Reflecting forty years’ experience in medical education and near-pathological university focus on grantsmanship, Abrahamson concludes that “there is no institutional respect for education and for those interested in studying and/or improving the educational process” (p. 112).

Based on the above, the concept of educational theory and practice as important to progress in dental learning commands limited acceptance from some dental faculty. Describing these dental educators as “resistant” to educational research may be surprising, but accurate.

Lest we single out dental education, the same problem exists at all levels of higher learning. Former Stanford University President Donald Kennedy bemoaned “the lack of conversation about what pedagogy meant, and what made it successful, [or] seemed especially striking; teaching, though it was our profession, seemed mysteriously absent from our professional discourse. We were speaking of an activity vital to ourselves, our students, and our public as though it had no data base, lacked a history, and offered no innovative challenges.”11

The education gap is nourished by faculty who perceive dental education as “different” or unique relative to other disciplines, with only dentists capable of appreciating its special needs. The question then arises: “How can a coordinated, unified, comprehensive education be provided by faculty who are so narrow that they believe only they understand their own disciplines, only they can teach students in those disciplines, and only they can decide what content should be included in learning requirements for students?”14 Likewise, education-based faculty develop-
ment in-service sessions seen by attendees as overly theoretical or impractical reinforce the divide. Faculty may also assign diminished value to educational concepts perceived as lacking clinical application.

But in the provision of health care, appropriate and skillful clinical application is exactly where we hope the teaching/learning dynamic is most successful.

Clinicodentists hired as dental faculty may undervalue full-time dental education relative to clinical practice because of much lower educator income. Faculty practice opportunities enhance full-time faculty income and take steam from this argument. Nonetheless, a retired clinician and senior full-time academic recently exclaimed, “Why would a student go through four years of dental school and two or three years of postdoctoral study just to be an educator?” (emphasis added). This may not be an atypical perspective from practitioner-based faculty; however, the exclamation might be countered and reframed as “Why not promote academic and research dentistry in students as well as produce competent practitioners?” or “Why would we hire faculty who are not committed to the continuous pursuit of teaching excellence?” As in all professions, dentistry needs to produce energetic professors who understand academic contexts, contribute to scholarly research, and advance the educational process.

Not in My Day!

Of course, we all know how these perspectives set up. On the one hand, we have high-achieving, intelligent, and skillful practitioners who succeeded in academically rigorous curricula in a prestigious profession and then went on to establish and thrive in practices characterized by a wide range of clinical experiences. From their perspectives, the educational character, strategies, content, and methodologies worked quite well, thank you very much. Why should they contribute to dissembling such a process as they teach their students? On the other hand, there are those “educational theorists” who threaten the time-tested and “traditional” process and may be inadvertently “messing with success.” The divide is set, and the disparate positions, at times, are palpable.

For example, pitching a basic educational concept such as “active learning” at a faculty committee meeting can bring expressions of resistance from entrenched faculty. The term is a trigger point. Even some experienced health professional educators deny the existence, let alone validity, of active learning. Yet active learning is a prime buzzword of contemporary higher education. McKeachie’s simple definition (learning experiences in which students are thinking about the subject matter) poses no threat. A treatise on teaching versus learning paradigms, or learning preferences and age-, gender-, or ethnic/racial-influences on student learning, may generate more discomfort and judgmental asides.

Factionalism, Parochialism, and Resistance

The search for root causes of the disconnect between dental and higher education leads to characteristics of organizational change in general and of dentistry in particular. That “change is a bear” is a truism for all institutions, including dental schools. Change is personally threatening and elicits resistance. Those holding power are usually reluctant to relinquish even part of that power. Yet, people and ideas can only succeed institutionally “with a defined commitment of resources plus a real delegation of responsibility with commensurate authority.”

Achieving change within the context of dentistry’s two great internal problems—factionalism and parochialism—is a profound challenge. As with all human endeavors, divisions within the dental house flow naturally. Practice independence fosters rugged individualism and infrequent peer input. Inbred education and practice encourage narrowness of vision (p. 90). As a fourth-year predoctoral student stated after observing a contentious curriculum committee meeting, “I am surprised at the close-mindedness of some faculty!”

Though differences between faculty can lead to an energetic and lively work environment, a conflict-ridden climate may result in counterproductive factionalism. If managed through effective leadership and respect for academic freedom, however, even adversarial faculty relationships could lead to a “productive energy” and “carefully considered curricular changes.”

Dental faculty who lack familiarity with academic culture and customs, but who are ready to inject private practice standards into academic issues, may create significant barriers to change and colleague discord. Along these lines, Arreola suggests that faculty resistance to “being developed” is partially explained by “1) resentment of the implied assumption that faculty may be incompetent in their subject areas, 2) a suspicion that they will be evaluated by unqualified people [or those with an ideological difference], and 3) anxiety that they will be
held accountable for performance in an area in which they have little or no training or interest.”

**Role of Governance**

With limited exceptions, contemporary American dental schools are governed “essentially the same as 50 years ago.” Much power is vested in departments. As Abrahamson states, “Instead of a ‘community of scholars,’ there tends to be a collection of ‘semi-autonomous academic fiefdoms.’ A colleague responded to this observation by noting, ‘There is nothing semi-autonomous about them!’”

Departmentalization contributes to parochialism and resistance to change. Protecting one’s turf may become the reflexive response to proposals for academic innovation, instead of maximization of student learning. Sachdeva mentions that, “at most schools, faculty are narrowly focused on their own areas of content and maintain a strong sense of ownership of both content and hours of instruction. There is fear of relinquishing power or control within the school.”

**Enter Accreditation**

As it turns out, however, academic dentistry has an obligation to evaluate educational quality and strategies and to compare educational outcomes. Traditional programs often have long product life cycles, which can lead to conservative entrenchment and eventually to senescence. Because of these concerns and the rapid evolution in biomedical and clinical sciences, accreditation organizations promote innovation in educational delivery.

In fact, the Commission on Dental Accreditation explicitly states in its Accreditation Standards that dental schools “will strive continually to enhance the standards and quality of both scholarship and teaching” and “show evidence of interaction with other components of the higher education, health care education, and/or health care delivery systems” (emboldened). The commission’s expectation, then, is for dental schools to actively pursue “innovation and experimentation with alternative ways of providing required training” and “improvement of educational quality.” Accreditation processes also monitor “evidence of an ongoing faculty development process” linked with “teaching, patient care, scholarship, and service.”

Concerned educators and accreditation mandates encourage higher education best practices to flow into the health professions. For example, accreditation standards have directed that pharmacy schools achieve progress in the shift to new teaching and learning paradigms. The American Council on Pharmaceutical Education’s explicit guidelines state that “evidence that the educational process involves students as active, self-directed learners and shows transition from dependent to independent learning as students progress through the curriculum should be provided” (emboldened).

**Bridging the Gap**

The following suggestions are proposed as strategies to help dental school faculty incorporate evidence-based educational best practices into their classroom, laboratory, and clinical teaching responsibilities.

1. **Encourage dental faculty to pursue master’s and doctoral degrees in education.**

   Relatively few faculty hold advanced education degrees. As more dental teachers graduate from these programs, higher education research will have greater presence in dental education, and vice versa. Among other dental schools, Nova Southeastern University College of Dental Medicine and Baylor College of Dentistry offer master’s of science degrees in dental education for aspiring teachers. Recent evidence suggests that such degree programs are worthwhile strategies for increasing faculty promotions, use of new educational programs, grant funding, and publications.

   One- or two-year faculty and advanced student teaching and learning fellowships cosponsored by dental and education colleges and featuring multimethodology class management experiences in both institutions should also be explored.

2. **Advocate, develop, and implement regular peer and expert teaching evaluation.**

   Research, publication, and grantsmanship are coins of the realm for faculty advancement. It is relatively easy to document one’s activity in these areas: hard data exist for research projects, published articles, and grants received. Data on teaching excellence, however, are hard to come by. If generated by students, they may be suspect by promotions committees as merely popularity indicators. How can superb teaching be valued on a par with research if no data exist to document teaching quality?

   Greater valuation of teaching as a basis for promotion and advancement rests partly on regu-
lar and standardized collection of teacher performance information beyond that of student course evaluations, usable by promotions committees with confidence in decision making.\textsuperscript{18-20} When institutions include evaluation of teaching quality as important components of faculty yearly review, instructors are more likely motivated to pursue evidence-based teaching and learning excellence.

3. **Advocate, develop, and implement a significant, continuing reward system for outstanding teaching.**

   Usually in conjunction with annual graduation activities, dental schools present “teacher-of-the-year” awards. These awards are sometimes generated by appreciative students. Some schools appear to view the single yearly presentation as satisfactorily discharging their obligations to recognizing and promoting achievement in teaching.

   Evidence is clear that many dental schools could do a far better job of honoring, rewarding, and encouraging teaching excellence.\textsuperscript{19,21} Without the prospect of substantial monetary reward and recognition, faculty can easily view time spent on nonscientific research and teaching enhancement courses as a nonproductive activity that jeopardizes academic careers.\textsuperscript{4,13,19}

4. **Make adult learning theory and practice a recurring topic of faculty development programs, and base all faculty development efforts on adult learning principles.**

   Studies show that participant satisfaction with medical faculty development programs is improved by employing adult learning precepts.\textsuperscript{22-25} These include a high level of learner self-direction, convenient class times, utilization of participants’ abundant personal experience, emphasis on practical knowledge, and learner desire for rapid application of knowledge and skills.\textsuperscript{13,24}

5. **Faculty leadership abilities should be developed and treated as institutional assets.**

   Dental schools need all the help and expertise they can get to fulfill their missions. The more faculty that professionally and passionately advocate change, the better the change prospects. As faculty become more talented and motivated, so do students.\textsuperscript{26} The higher that leadership and scholarship bars are set, the more capable the faculty and, most importantly, the graduating dentist.

6. **Educators need to minimize jargon, maximize understanding, and share experiences through quality published research.**

   Peterson puts the issue best: “If educational research is to inform more teachers it must become accessible, comprehensible, convincing, and demonstrably related to the real issues faced by educators in the classroom and clinic. Educators must convince colleagues that the evidence base is as important in educating new doctors as it is in assessing a new therapy.”\textsuperscript{31}

   Academic units can utilize other strategies to address faculty resistance to innovation and implement best educational practices. “Cultural” change to valuing innovative teaching and equating teaching with significant scholarly activity may be advanced by 1) creating institutional “teaching and learning centers” or forums for the advancement of quality improvement in teaching, 2) keeping course and teaching portfolios, thereby establishing pedagogical “histories” in a department, and 3) establishing teaching support teams composed of faculty dedicated to better teaching and learning.\textsuperscript{14} Successful implementation of these strategies could lead to an infectious spirit of communication improvement throughout academic units, with students well served as a result.

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**Conclusion**

Bloom reminds us that “health professionals need to be creative, flexible, non-dogmatic, and critical in their thinking to be effective. Unless the norms of the professional [education and] working environment[s] reflect these same values, curriculum change is futile.”\textsuperscript{10} A close relationship between education research and conduct of dental education will help dental students and graduates practice the values essential to Bloom’s effective doctor. Accreditation guidance is an important factor in forging links between dental education and best practices in classroom, laboratory, and clinical teaching.

While phrased in words often unfamiliar to dentists, the knowledge brought to the dental school table by educational specialists bears due consideration by dental faculty and leadership.\textsuperscript{27} Learning distinctions (active versus passive, teaching versus learning, student- and teacher-centered) are real and valid, as based on common sense as any part of dentistry. Dentist-educators ignore these differences at the peril of compromised dental education.
A learning culture needs to grow throughout American dental education that values not only teaching excellence and evidence-based education, but also faculty scholarship and leadership. This culture encourages sensible educational experimentation and evaluation and promotes faculty development in teaching and learning theory and practice. Dental schools should develop teaching and learning centers of excellence and offices of educational development through advocacy and funding support. Dental educational specialists can assist in making faculty aware of educational best practices by conducting and publishing the results of well-designed research studies that investigate daily issues faced by dental teachers. Administration should further advocate for yearly inclusion of peer and expert teaching evaluation data in faculty appointments and promotions processes and create notable recognition and reward systems for exemplary teaching performance.

While the dental school mission includes preparation of graduates for the realities of dental practice, dental school learning culture tenets should take precedence over faculty private practice experiences and private conceptions of best educational practices. Practitioner faculty endorsement of the learning culture is an important part of academic adaptation.

Nearly 100 years ago, the distinguished Canadian professor Sir William Osler (1849–1919) boldly proclaimed: “The successful teacher is no longer on a height, pumping knowledge at high pressure into passive receptacles. . . . He is a senior student anxious to help his juniors.”

Would someone please pass the word?

REFERENCES