

Creating the Dental School Faculty of the Future: A Guide for the Perplexed

Charles N. Bertolami, D.D.S., D.Med.Sc.

Abstract: Building the faculty of the future has to be rooted in understanding the nature of future oral health delivery practices. Unfortunately, no one can reliably predict that future. Accepting any given scenario inevitably requires a leap of faith, but the cost of guessing wrong is high. In considering full-time academic careers, students are often not well prepared to make such a definitive choice. When dental educators ask dental students to consider academic life, what we are really doing is trying to induce them to make a very dramatic break with their settled career aspirations, which have already been firmly established in the minds of many of our students. The reality is that being a full-time professor of dentistry is more like being a professor in any other university discipline than it is like being a dentist in practice. Thus, the appeal of dental school to most applicants as a pathway to a practice/business career and existing admissions practices unintentionally bias the system against identifying future educators. Dental education is now engaged in a predictable blend of temporary, short-term, intermediate, and long-term approaches to finding faculty. Among these approaches are the following: cannibalizing other dental schools, collaborating with other professional schools, recruiting retired dentists, and growing our own faculty based on positive role modeling. The high cost of a dental education and the relatively low compensation of dental faculty are disincentives for some students who might otherwise consider dental education as a career option. However, the differential compensation between faculty members and owner/proprietors of dental practices may be misleading because of the business risks the latter assume. Understanding this means that dental schools might be more successful in finding future faculty by focusing on dental school applicants who fit the profile of employees rather than businesspeople because the lifetime differential in income nearly vanishes when comparisons are made between the categories of faculty member and employed dentist. At present, educators rely on a lack of self-knowledge among students in the hope that some who thought they wanted to be dentists will discover that they are ill-suited for practice and can be converted to becoming educators instead. It is not an optimal arrangement. Among practical suggestions to enhance recruitment of faculty are innovations in imprinting students early with the identity of being an educator and, in association with this concept, assisting with financing the education of future teachers. Ultimately, success in the dental educational enterprise will depend on attracting individuals who are intrinsically captivated by teaching as a moral vocation.

Dr. Bertolami is Professor of Oral and Maxillofacial Surgery and Dean of the College of Dentistry, New York University. Direct correspondence and requests for reprints to him at New York University College of Dentistry, 345 E. 24th Street, New York, NY 10010; 212-998-9898 phone; 212-995-4080 fax; Charles.bertolami@nyu.edu.

This article is one in a series of invited contributions by members of the dental and dental education community that have been commissioned by the ADEA Commission on Change and Innovation in Dental Education (CCI) to address the environment surrounding dental education and affecting the need for, or process of, curricular change. This article was written at the request of the ADEA CCI but does not necessarily reflect the views of ADEA, the ADEA CCI, or individual members of the ADEA CCI. The perspectives communicated here are those of the author.

Key words: dental education, research, scholarship, dental practice

What business are we really in? The answer to that question is important because it will determine how we go about building the dental faculty of the future to best serve the interests of the public. The corporate literature is replete with now classic examples of organizations that did not know the business they were in.¹ During the last decades of the twentieth century, the railroads thought they were in the railroad business. They were wrong. They failed to recognize that they were actually in the transportation business; not recognizing this caused them to go out of business. In contrast, the telephone company did recognize that it was not actually in the

telephone business; it was in the telecommunications business. As a result, the telephone companies have transformed themselves and, unlike the railroads, they have survived and often prospered. Did Eastman Kodak acknowledge in time that it could not remain in the business of manufacturing photographic film and stay in business? A 70 percent drop in its share price over the past ten years suggests that it did not. When did the Polaroid Corporation come to realize that technology would turn all cameras into instant cameras and that Polaroid would not be a player in this new world? As dental educators, knowing what business we are in and understanding the impact

of social, cultural, economic, and technological advances on that business is crucial. The problem, however, is that discerning our true business is not all that easy.

Boundary Conditions and Context

Building the faculty of the future has to be rooted in understanding the nature of future oral health delivery practices. Unfortunately, no one can reliably predict that future; thus, it is impossible to know with certainty or precision what those practices will be. Accepting any given scenario inevitably requires a leap of faith, but the cost of guessing wrong is high. Thus, a certain resistance to change among practitioners is understandable, as is the difficulty some have in seeing how the world is flowing around and beyond the isolated dental office.

DePaola has described in depth the forces at play, including demographic changes, media influences, advances in science and technology, economics, public policy, corporate strategies, consumerism, and regulatory influences—which are all primary drivers of change.² For practitioners, things are good at the moment. The practice of dentistry is an activity that, once learned, lends itself to the feeling of effortless mastery and easy serenity.³ The fluidity and competence with which experienced dentists negotiate their way around the oral cavity in both diagnostic and therapeutic maneuvers offer the comforting illusion that the current dentist-provider model is irreplaceable because of the highly individualized and technical aspects of care delivery. Proficiency in executing technically demanding dental procedures is so much a part of the profession's culture that it goes right to the heart of many practitioners' identities as dentists.⁴ The success of the existing dental care delivery model, at least from the financial perspective of the practitioner (if not that of the public as a whole), therefore engenders reserve among both practitioners and educators for untested innovation.

The equanimity and attractiveness of dental practice are augmented by a further set of assumptions: that the dental profession will always have ultimate professional responsibility for the nation's oral health; that the public will continue to allow the profession to be self-regulating; and that the corporate sector can be relied upon to educate dentists in incremental improvements in technique and instrumentation over time.

None of these assumptions is inarguably correct; and, to the extent they are not, dental education will confront a dilemma: will it train dentists or will it educate providers of oral health care services? The difference is subtle but important because the former approach requires an increasingly unsustainable educational and economic model, while the latter implies a great increase in the diversity and qualifications of oral health care providers that the present educational system is not well suited to provide. The latter model might include not only dentists and dental hygienists, but also dental nurses, dental health aides, physicians, physician assistants, nurses, and pharmacists, as well as oral preventive assistants, community dental health coordinators, and others who will come to occupy currently vacant care delivery niches. Thus, dental educators can commiserate with Livy's first-century lament: we are able to endure neither the present condition nor its cure.⁵ If we see ourselves in the dentist training business, then the kind of faculty to be built in the future will be quite different from what it will be if we see ourselves in the business of educating oral health care providers.

Who Will Be the Faculty of the Future?

In light of very substantial uncertainty over what, exactly, dental educators of the future are going to be asked to do, anybody's recommendations on the configuration of the future faculty deserve all the credibility of a wild guess. Nowhere is this more evident than in data-driven analytical studies on future adequacy of the dental workforce.⁶ Despite meticulous analysis of the best available (and voluminous) data, little can be predicted with confidence beyond the admirably evasive assertion that "[if] demand for dental services grows markedly more rapidly than expected, an increase in the supply of dental care services greater than that forecast . . . may be needed to meet the increased demand. Alternatively, if demand does not grow rapidly, dental care capacity will be more than adequate and a lack of busyness among dentists could emerge."⁶ Rapid and unpredictable change, uncertainty over initial assumptions, and differing objectives of the experts making the forecasts lead to at least ten different scenarios of the projected number of dentists and to twelve different forecasts of the future supply and demand for dental services—all depending on possible changes in productivity, changes in the annual

output of dentists by dental schools, and different population trends.

Based upon these presently unknowable variables, supply could either outstrip demand for dental services by as much as 26 percent or, alternatively, demand could outstrip supply by almost 34 percent. The uncertainties are even greater when guessing at what the actual content of dental practice will be. Nevertheless, such analyses and their foretaste of credible outcomes are useful in sensitizing us to subtle trends as they materialize and, in theory, guiding incremental midcourse corrections aimed at titrating supply and demand.

Whatever shapes future oral health care delivery practices may assume, if the university is going to remain the vehicle for providing the requisite education, a few basic assumptions are still likely to apply. The most important of these is that either dental education will need to adapt itself to the broader realities of university life (which is evolving rapidly in its own right) or it will have to separate itself from the current university-based model of dental education. Both alternatives are plausible, and examples of each are already in evidence. Assuming the traditional university-based model of dental education, what will it take to make teaching (and the research integral to a university-based teaching model) appealing to the kinds of individuals universities will need? Can anything be learned from the current dental faculty crisis as an aid to moving forward without, at the same time, focusing obsessively on the past? A premise of this article is that there is little point to concentrating on the origin of faculty shortages of the past, regardless of whether one's viewpoint is accusatory or exculpatory, because both perspectives are moot: the people who will be needed in the future are likely to be quite different from those of the past. Also critical to designing a dental faculty for the future will be a straightforward look at impediments to careers in education such as dental graduate debt and the need to balance salary and working environment.

Moving Beyond Current Shortages

What are we going to do about the dental faculty crisis? First, let's all agree to *stop talking about it!* It is not that the numbers cited for faculty shortages are wrong; it is just that they are nothing new. The following statement comes from the 1950 *ADA Transactions, Annual Report of the Council on Dental Education*: "The Council has made a study of the number of faculty positions that are now available in

the dental schools and finds that 28 schools reported 135 vacancies."⁷ Scaling this up to the current number of schools makes evident that the situation today is not much different: 245 full-time clinical faculty vacancies and seventy-seven part-time vacancies in roughly double the number of dental schools.

Further, these numbers of vacancies have to be viewed in perspective. An absolute number of just 322 for an entire nation of 300 million does not seem like all that big a problem. Maybe it actually is, in light of the smallness of the dental educational enterprise, but it just does not seem insurmountable given some ingenuity and innovative thinking; after all, we are still talking about just 322 people. For an example of a perhaps more dire situation, the nursing profession is currently seeking many thousands of new practitioners (30-40,000 by some estimates) to function in a variety of patient care and managerial roles at bachelor's, master's, and doctoral levels and also several thousand teachers for nursing schools.

Perception Becomes Reality

If "there is nothing either good or bad, but thinking makes it so,"⁸ it would be interesting to know how many dozens of students have had their incipient interest in an academic career derailed by all the talk of how difficult it is to convince anyone to go into education. As a self-fulfilling prophecy, the very public and sometimes inaccurate discussion of the inadequacies of academic life may have had the unintended consequence of driving students away from teaching and research.

Appearances are important. The nature of the conversation and the attendant hand-wringing have sent students a clear message: the university is not where the action is. So where *is* the action? Astonishingly, we educators have sent students the message that a special mystique resides in the strip mall or suburban bungalow practice. For some it may, but not for all. Neil Postman has written that there is a difference between the information faculty *give* to students and the information they *give off* to students.⁹ What we may have done unintentionally is to give off to students a mixed message: what we do as faculty members is not interesting, important, or fun. None of this is true. But the result is an uneasy ambiguity in the minds of even those students who have a natural inclination toward academics. That message drives out the confidence needed to try something a little different from what the majority of classmates are doing or from slavishly fulfilling the uninformed

expectations of parents, family, and friends. The bottom line is this: what we as faculty members project to students is important. Students are our audience, and projecting to them that a career in education is only for the infirm, the incapable, or the otherwise deranged is wrong and perpetuates the myth that “those who can, do; those who can’t, teach.”

Making the Break

Educators have to understand that when it comes to making a career choice, a fifteen- or twenty-year-old might well say, “I want to be a dentist,” and then follow through with this career plan, but is unlikely to say, “I want to be a dental educator” or, even more implausibly, “I want to be a junior dental scientist.” The tastes of students in that critical age bracket are just not sophisticated enough to discern such a definitive choice. Therefore, what we as dental educators are really doing when we ask dental students to consider academic life is trying to induce them to make a very dramatic break with their settled career aspirations—that is, with an envisaged identity that they have had years to become comfortable with. We cannot really expect a student to make such a complete career change frivolously; yet that is precisely what is required because that is what academics really is: it is a completely different profession, though we often package it as a variant of clinical practice to make it more palatable. The reality is that being a full-time professor of dentistry is more like being a professor in any other university discipline (say law or history) than it is like being a dentist in practice. Understanding this is central to attracting students who are well suited to academic life and who, incidentally, can be entrusted to be articulate defenders of dentistry as a legitimate intellectual discipline within the university—a matter always, regrettably, open to question.

Getting a significant number of individuals to make such a dramatic break with their established career ambition is difficult for a number of reasons. First, our current target population is relatively small. Effectively, we are talking about students enrolled in dental schools, and this amounts to only about 4,500 new dental students per year. Retired dentists may be another target population; however, cultivating a robust, long-range educational enterprise cannot rely on retirees (or, for that matter, on superannuated full-time faculty members). Correspondingly, there may be a small target population of active pre-retirement dentists who are willing, for various reasons,

to give up practice and enter a full-time academic career—but, again, this population is small because of the intrinsic family and business commitments associated with giving up a dental practice, not to mention the prospect of acquiring additional education to enhance the possibility of success in academics. These entanglements are nicely described by Born and Nelson.¹⁰ Thus, it seems credibly defensible that dental education as an intellectually alive, learned profession depends on recruiting dental students and young practitioners into full-time academic careers where they will remain and advance over their entire professional lives.

Second, the population of plausible candidates is not only small; it is already highly filtered and, to some extent, biased. All dental students have gone to college where they encountered professors. They know what academic life is all about and understand what it means to be a professor. In deciding to go to dental school, they have consciously rejected the notion of an academic career. The fixity of this idea in a student’s mind—that they are going to be a dentist not a professor—generates a relatively high gradient against which dental educators have to prevail if such students are to be attracted to an academic career in spite of an explicit and antecedent decision against it.

Third, some clinical dental professors adopt, almost by tradition, a perverse attachment to a perpetual state of disaffection. Commiserating with students over the dissatisfactions of an academic career does not engender the kind of positive role modeling needed for students to consider changing their life’s work from dentist to professor. For someone to change that dramatically, the action has to be interpreted as a positive and rewarding expansion of one’s life goals. Some students could, under the right conditions, find themselves entranced by academic life.

Exactly what kind of student is captivated by a career in education?

Academics will be attractive to a student who is intellectually curious and who has a need to be involved in cutting-edge innovation at the interface between professional disciplines and between the profession and society in general. The academic life is for the bright student who sees universities as places where talented people work, achieve, and are recognized for their accomplishments in ways inaccessible to others in society. Such students are attracted to the higher credibility often accorded professors in professional matters because of the presumption of freedom from bias, such bias being a flaw that both

academic life and the scientific method try to immunize against. It is for individuals who recognize that money does not necessarily reward excellence and so in itself may not be comprehensively satisfying. Thus, academic life will appeal to individuals who like being recognized as experts, being professionally challenged, and working within an environment that affords intellectual stimulation and growth, and who are comforted by the knowledge that, on the day before retirement, they will not be doing exactly what they were doing when they entered practice decades earlier. For the right person, academic life promotes progress and growth, and is especially appropriate for the kind of person who is attracted to self-investment, asking not what am I *getting* out of this career, but rather what am I *becoming* in this career?¹¹

Born and Nelson¹⁰ found that there is a distinct subset of dental students who might be open to alternative career options. Their findings are documented by the insightful comments from case studies of young to middle-aged dentists reported by these investigators:

“A dental education prepared a person for one career only. No options. . . . If I had it to do over I would never have chosen dentistry” (Age 35).

“Dentistry is a profession that leads to nothing else. The hardest part of a career change is that you are highly interested, motivated, and intelligent. However, nothing you have been doing lends itself to blending into other employment areas. In time you are vocationally and socially limited to a somewhat dead-end condition” (Age 40).

Solutions: Temporary, Short-Term, Intermediate, and Long-Term

Relative to producing full-time academics, the fecundity of the available recruitment pool is, at present, low. Thus, dental education is now engaged in a predictable blend of temporary, short-, intermediate-, and long-term approaches to finding faculty. Some of the options are basically a zero sum game that do nothing to advance the dental educational enterprise, while others hold long-term promise. They are represented by the letters C-C-G-G:

- *Cannibalism*. Dental schools can continue to cannibalize each other—stealing faculty from one other and counting each such recruitment an institutional success. This approach pits one institution against another, and ensures that there will be a continually changing roster of dental schools that are seen at the top of the educational pyramid in a musical chairs arrangement. Because the size of the top cohort never becomes any larger, dentistry is not enhanced as a learned profession by cannibalism; the critical mass of top-flight academic dentists remains the same—they just move from place to place.
- *Collaboration*. As both a short-term and a long-term strategy, collaboration is essential. Dentistry cannot be an isolated world whose culture and standards are both different from and lower than other health professions. If this is true for the profession as a whole, it must also be true for dental education. Dental educators need to recognize that the currency of institutions of higher learning is intellectual capital, not occupying academic real estate. Dental schools cannot afford simply to be a geographical expression, that is, a school-in-a-box. They need to be wherever the action is, and this usually means spreading out, diversifying, becoming completely intercalated with the health science center, the parent university, the community, and beyond.

It might be hard to locate such an idealized school physically because there are offices, laboratories, clinics, faculty, and students scattered all over the campus intermixed with the other health professions schools, distributed all over the city, and—through community outreach clinics and practice-based research networks—across the state and region. Such places are evolving into virtual schools; and some of our existing schools are well along this path. They occupy the tectonic interface between disciplines and professions. At their margins they resemble the tide pool: the space between land and sea—sometimes wet, sometimes dry. It is a highly creative boundary zone where life and ideas originate. As a mental image, university-based dental schools have to become miscible with other compatible and philosophically aligned professional schools to make new opportunities available, to extend the reach of the profession’s official responsibilities, and to tap rich new sources of potential educators, while allowing the dental school to retain its unique identity.

The term “miscibility” is not used in the sense of two liquids becoming completely blended, but rather, as an interphase—a functionally

graded interface—like two solids that blend into each other at their interface, yielding a conjoint product with properties, capacities, potentialities, and sensitivities that neither material would have alone. The unique characteristics and integrity of each component are entirely retained as one moves away from the interface toward the body of each component; yet this new composite creation, while capable of accomplishing what each of the constituents can do alone, can also do what neither can do by itself—something entirely new.

Under such conditions, other professional disciplines outside of dentistry begin to care that there is a dental school on campus. Such dental schools are more likely to be invited to participate in broad collaborative initiatives, such as the Clinical and Translational Science Award program; they become players in the National Institutes of Health (NIH) roadmap initiative and in practice-based research networks. Equally important, they begin to attract students and faculty members who feel comfortable within—and actively embrace—the new collaborative environment in which so much more becomes possible and which is requisite for success in the world today.

- **Geriatric Set.** Dental schools can continue to tap retired dentists, including retired military dentists, as a source of clinical teachers. This ample labor source plays well into the decision to locate the newest dental schools in the Sunbelt states that are havens for retired dentists. Having retirees gravitate back into dental schools after careers in practice is nothing new, but the highly successful economic model upon which the newest schools are based does require it. The problem, of course, is that what retirees can offer to educational institutions is usually somewhat limited to clinical supervision of students. With notable exceptions, they are unlikely to form a robust base for the intellectual life of the discipline. In fact, the role model of the dentist who has better things to do than to teach until reaching age fifty-five may be positively detrimental because it teaches students to delay entry into academic life. It reinforces the view that academics is just an exit strategy from professional life. Everybody wants to teach—but not full-time and certainly not now.
- **Grow Our Own.** Ultimately, growing our own is the only long-term solution to a shortage of dental faculty that will facilitate dentistry's capacity to retain its identity as both a learned profession and a caring profession. Growing our own is a solu-

tion both for individual dental schools and the profession as a whole. Some dental faculty will remain permanently at the institution where they were educated, while others will move on to other dental institutions, but in either case the strength of the dental educational enterprise is enhanced.

Although this article focuses primarily on attracting dentists into academic careers, the issues involved are not fundamentally different from what is needed to attract basic scientists into academics as well. It is easy to fall prey to the misconception that faculty shortages arise only among clinician scientists, whereas basic scientists who do not have a comparable clinical alternative as an income source can be presumed to be a reliable source of future educators. This is not true. Increasingly, Ph.D. scientists are opting for careers in the corporate sector rather than in academics. Interviewing both graduate students and postdoctoral scholars at my previous institution as chair of a search committee for the graduate school dean and also as a member of a separate site visit committee at a major university that produces a large number of Ph.D. graduates in the biomedical sciences, I posed the following question: how many are planning on careers in academics? Out of a group of perhaps forty (in total), fewer than five said that academics was the preferred option. All others were planning on entering industry—with some hoping to participate in biomedical start-up ventures stemming from graduate work, anticipating an equity position and attendant riches at an early age. One of the graduate student leaders remarked that for Ph.D. graduates it is academics, not corporate employment, that now should be considered the “alternative” career option. Evidence for this trend is not only anecdotal but is recognized as a reality.¹² Thus, growing our own has relevance not only to future clinical science faculty, but also to future basic science faculty.

How Do We Grow Our Own?

The answer is nothing new—almost a cliché, but captivating the imagination of students to consider academic careers can be achieved only through role modeling. Positive role models whom students find themselves wishing to emulate is the most powerful, perhaps the only, effective strategy to attract a new cohort of students to dental education as a viable career option.

The term “role modeling” is often used but seldom defined. What, exactly, is it? The following is proposed:¹³ role modeling is a condition occurring

in the mind of a student that conflates a given *action* with the *identity* of another person, a mentor whom the student respects, admires, and—ideally—feels affection toward. Expressed more simply, the student says, “This is how Dr. X would do things and I want to be just like Dr. X.”

This is really the only ultimate solution to a shortage of dental faculty. It does not begin with students. It begins with faculty who are worthy of being emulated as mentors. In turn, mentor-worthiness begins as a state of mind that values all those attributes to which others might aspire. It is the opposite of disgruntlement, dissatisfaction, and victimhood. A good test for mentor-worthiness might be to take the following description and ask oneself these questions: is this me? would someone who has known me for twenty years and who knows me well describe me this way?

Socially poised, outgoing, and cheerful, not prone to fearfulness or worried rumination? Having a capacity for commitment to people or causes, for taking responsibility, for having an ethical outlook, for being sympathetic and caring in your relationships? Comfortable with yourself, with others, and with the social universe you live in?

This description, paraphrased from the writings of Daniel Goleman,¹⁴ defines someone with a high emotional intelligence. Goleman points out that others might use a more traditional term for the “body of skills that emotional intelligence represents: *character*.”¹⁴ Thus, the prospective mentor has to ask herself or himself, if this is not me, would I *like* it to be? It can be but it requires a decision, along with some inside information. The inside information is that none of the attributes described are intellectual in nature; they have nothing to do with IQ, physical capacities, or perceptual motor skills. They are all emotional in nature. An individual possessing these emotional traits is manifestly mentor-worthy, and is certain to attract protégés who recognize qualities that almost everyone would like to see in themselves and would be willing to work to secure.

Although mentoring starts with faculty, it does not stop there. A progression of mentor-worthiness has to be recognized and endorsed by the entire organization since certain factors, such as age, are beyond the mentor’s control, yet may make someone a good mentor for one person but not for another. Kushner has pointed out that a mentor has to be a little older than the protégé, but not by too much.¹⁵

The student has to be able to relate to the mentor casually in a way that becomes more difficult as the age differential increases. Thus, first-year students are more likely to model themselves on fourth-year students than on senior professors. It follows that there is a mentoring opportunity for everyone within the organization, at literally every level: professors for junior faculty; junior faculty for residents and advanced students; even first-year students for applicants, college students, and high school students. Mentorship has to be talked about within an organization often and at every level. Having a mentor and being a mentor have to be understood as communal aspirations. The mentor-protégé connection can be one of the deepest and most satisfying human relationships outside of the direct family bond.¹⁵ Mentors “even when they are gone . . . [move] us to live as, in their higher moments, they themselves wished to live.”¹⁶ The imagination of the general public has been captured by the potential depth and richness of the student-professor relationship in Albom’s wildly popular book, *Tuesdays with Morrie*.¹⁷ The bottom line is this: “connecting students to somebody or something worthwhile is everybody’s business.”¹⁸ Faculty members need to appreciate the chance they have to actively cultivate protégés as one of the special gifts of academic life.

The Elephant: Finances— Academics vs. Practice

Nothing is more frustrating for educators than to encounter talented students who are committed to academic careers, especially those enrolled in D.D.S.-Ph.D. programs, being turned away from academics because of the burden of debt, the lure of high income, or both. By the time college students have gravitated to dental school as a career option, many do seem pretty materialistic—not surprising inasmuch as a profession will attract applicants in accordance with the image it projects to the lay public. Therefore, no serious effort at addressing the faculty of the future can evade the impact of debt and compensation on the choices students make—a sometimes troubling internal dialog. Interestingly, little note is made by Born and Nelson¹⁰ of finances as being sufficiently compensatory for dentists who are otherwise dissatisfied with clinical practice. In other words, does the money make up for it all? Apparently not—and most evidently not for that subset of people whose spark of intellectual curiosity can only be ignited within a university setting.

There is no getting around that we exist in a highly materialistic mainstream culture in which economics trumps everything else. And yet, for such capitalism to work in a stable society, protected niches have always been accommodated where the rules are partially suspended to make the rest of capitalism functional. Such protected niches are like the ball bearings or the lubricant that allows an engine to function. Examples of protected niches that historically have responded to a higher calling transcending the ethos of the marketplace include medicine (until the introduction of managed care in 1995); the church and other religious and philanthropic establishments; the public service sector, including government; and academics.

But with unrestrained capitalism in the ascendant, even in the professions, and with many dislocations in how the system actually works, some of these niches are becoming less protected. In other words, it has become harder to argue on behalf of the compensating privileges of academic life inasmuch as those special privileges are no longer universally accorded high value by society.

In 1961, a report of the American Council on Education asserted that it will be “impossible to retain existing [dental school faculty] unless salaries are sufficient to provide a standard of living commensurate with at least that of the average dentist.”¹⁹ Little has changed since 1961 in terms of our understanding of how disincentivizing dental faculty salaries are for individuals contemplating academic careers. But, perhaps more optimistically, despite such a claim being made in 1961, the dental educational enterprise has somehow survived. The lesson is that the impact of finances on career choice may be more complex than a market-driven understanding of the matter admits. That compensation is an important issue no one seriously disputes; however, as observed by Nash and Brown, “greater understanding of some of the other factors at play can help planners focus on those features that are most important in career decision making.”²⁰

Differential Compensation

One way to address the problems stemming from income differential between dental educators and practicing dentists is to argue that these categories actually encompass three, rather than two, discrete occupations: dentist (or specialist); professor; and businessperson (understood as owner/proprietor of a practice). Different levels of work, responsibility, and risk distinguish these three jobs.

Some blend of work, responsibility, and risk are what people are actually paid for. Work is tangible labor: a product or service, including intellectual activity. It pays the least. In contrast, putting your head on the chopping block pays more: in other words, assuming personal responsibility by putting your own welfare at stake is something societies need and are quite willing to pay for. This is what corporate CEOs and university presidents do. However, what pays the most is willingness to place one’s own financial assets at risk. The potential for losing personal assets has to be compensated by an equivalent potential for bringing great financial return.

Different jobs offer a different mix of these elements. How they blend goes a long way in explaining the differences in compensation between faculty members and practitioners. To the extent that students are accepted into dental schools with a higher sense of entrepreneurship and are willing, as doctors, to assume responsibility for the welfare of others (bearing the consequences of making diagnostic and therapeutic blunders) as well as being open to putting their own personal financial assets at significant risk in the building up and running of a business-based dental practice, in return for significant economic reward associated with these risks, then a strong proportion of students will find an academic career relatively unattractive.

Nash and Brown’s excellent analysis of the relevant issues makes the point that anyone who is considering dentistry as an occupation—whether practice-based dentistry or academic-based dentistry—must be willing to incur significant direct educational expenses; forgo other income while in dental school; undertake grueling classwork, training, and examination; anticipate a future that begins with debt reduction; and face uncertainty about the amount and course of future earnings.²⁰

For the person contemplating a career in dental academics, Nash and Brown pose the crucial question: “Are the monetary benefits from dental training large enough to repay all costs of training and yield a positive net return to the dental school faculty member?” From a strictly financial standpoint, the comparisons in Figures 1 and 2 are instructive.

Analysis of these findings reveals that a “good part of the differential between faculty compensation and owner/private practitioners can be explained as the premium that the latter receive for accepting the business risk of owning a practice. These risks include capital investment and management risk.”²⁰ In other words, among those individuals who have a

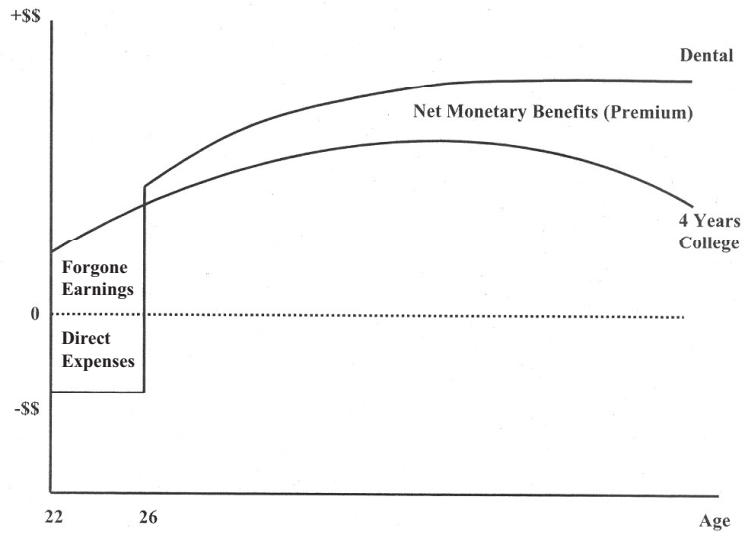


Figure 1. Model of estimating the rate of return to an investment in a dental education

Source: Nash KD, Brown LJ. Rate of return from a career as dental school faculty. In: Brown LJ, Meskin LH, eds. The economics of dental education. Chicago: American Dental Association, Health Policy Resources Center, 2004. © American Dental Association.

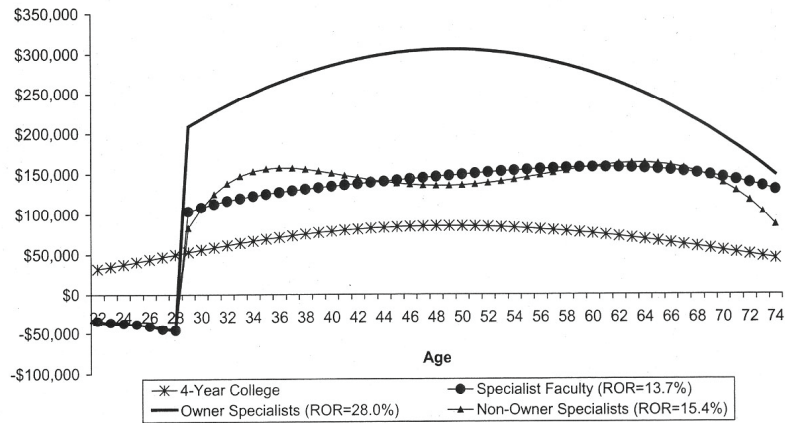


Figure 2. Average earnings of dental specialists in various careers and average earnings of four-year college graduates, by age, 2000

Source: Nash KD, Brown LJ. Rate of return from a career as dental school faculty. In: Brown LJ, Meskin LH, eds. The economics of dental education. Chicago: American Dental Association, Health Policy Resources Center, 2004. © American Dental Association.

dental (and, possibly, specialty) education, there will be some who aspire to the role of owners/proprietors and others who aspire to the role of being employed dentists. Among those dentists choosing to be employees, the lifetime differential in income between faculty members and practitioners is small. It is only when comparisons are made with owners/proprietors of dental businesses that the large differentials in income emerge.

This does not seem in any way unfair or unjust, inasmuch as “owning and equipping a dental office is expensive and not risk free. . . . Illness or accident can end a career before accrued debt is paid off . . . [and] both the capital risks and management risks must be compensated.”²⁰ In addition, such owner/proprietors very likely initiate their businesses by first going out to secure a business loan. In contrast, neither employed dentists nor dental school faculty members are asked to make equity investments that require them to begin their careers by assuming yet more debt. Viewed this way, and by discriminating between the categories of employee/dentist versus owner/proprietor dentist as suggested by Nash and Brown, dental faculty positions can never be expected to offer salaries competitive with dentists who are proprietors of a business. In light of this, to the extent that financial comparisons are made between faculty positions and practice positions, they should be made only among the category of employed dentists: “This is the premium such individuals pay for the kinds of freedoms employees typically enjoy—including paid vacation time, possibly sick time, a lack of assets at risk, and relative ease of moving from job to job or place to place.”²⁰

If dental schools incorporate into their initial admissions decisions the basic qualities and personality types of the individuals being admitted, they can try to titrate probabilities of graduates opting for positions as employees versus owner/proprietors. If applicants fit the profile of those opting for positions as employees, dental schools will find themselves more competitive as a career option. Whether dental admissions processes can ever discriminate among applicants with that degree of accuracy is, of course, an open question. However, innovative testing strategies are emerging that may make such speculation more than a “quixotic venture into esoteric realms.”²¹ Though typical admissions evaluations rely on narrow measures of ability and achievement, especially remembered knowledge and analytical skills, other testing methods may be able to assess such elusive qualities as creativity and practical thinking—even wisdom.²¹ If this is possible, perhaps ways can be devised to allow the requisite

qualities for an academic career to be identified and selected early on. Doing so would almost certainly be accompanied by a drop in some of the qualities intuitively selected by dental school admissions committees today. Perhaps entrepreneurship would be one of those deprioritized qualities.

To intentionally select students who are more risk-averse and unwilling to stake their future with their own assets does sound like an attempt to make the future profession somewhat more timid in its overall outlook. This could well be true, though a similar transition has taken place in the field of pharmacy: many pharmacists once envisaged themselves as businesspeople and entrepreneurs, owners of their own pharmacies. Yet, today, almost all professionally active pharmacists are employees of large drugstore chains, hospitals, or the pharmaceutical industry. During the decades of transition, the academic standing of pharmacy within universities and hospitals grew enormously with significant new kinds of opportunities (including the Pharm.D. degree). Moreover, the large chain stores and pharmaceutical industry have become powerful political advocates on behalf of pharmacy. Admittedly, this has all occurred with significant loss of personal autonomy for pharmacists.

Is there some way the profile of the dental profession can remain entrepreneurial, not become risk-averse, and yet grow students who have an institutional or organizational perspective? If the profession of being a full-time educator is taken seriously and understood as fundamentally different from the profession of being a practicing dentist, it might be possible, provided the right kinds of people are recruited early.

Inconsistencies and Dilemmas

A clear inconsistency in the logic underlying this article (and a dilemma for dental education) is the inherent incompatibility between identifying and cultivating students for academic careers as early as possible (even during the admissions process or earlier), while recognizing that young and inexperienced students have limited capacity for making such a definitive choice. In a way, we educators rely on this lack of self-knowledge in the hope that some students who thought they wanted to be dentists will discover that they are ill-suited for practice and can be converted to becoming educators instead. This is a less than optimal strategy for building the dental school faculty of the future.

Is there a resolution to this dilemma that can be counted on to help build a future faculty that will be quantitatively and qualitatively robust? Possibly not, in which case we just continue to muddle along as we have been, hoping that enough people at critical stages in their development will guess wrong about what career suits them best, and then gravitate to academics as an alternative that allows them to salvage whatever investment they have already made in pursuing a dental education, and/or that there will continue to be a supply of retiring practitioners and military dentists in the fifty-five to sixty age range who desire to serve as clinical supervisors for a few years prior to complete retirement.

On the other hand, a slight adjustment in the thinking of key stakeholders might make a difference. Consider this thought experiment: presuming

key stakeholders to include not only dental educators and dental students, but also pre-professional college advisors, members of admissions committees, dental applicants, and practicing dentists, the construct depicted in Figure 3 categorizes dental students and dentists on the basis of their suitability for careers in practice and in education. All of the cells in the fourfold table are currently represented to varying degrees in the dental profession; the only issue is: do the cell frequencies match future needs?

Thus, within any potential applicant pool there will be those whose abilities, personalities, and interests are exceptionally well suited to either a career in practice or a career in education (Cell A). These charismatic few have all the capacities needed for assuming the risks and management responsibilities of running a business and are strongly people-oriented;

Suitability Model

		Practice	
		Yes (+)	No (-)
Academics	Yes (+)	A + +	B + -
	No (-)	D - +	C - -

Figure 3. Generalized hypothetical categories of dental students and dentists according to their suitability to careers in education and practice

yet they also have intellects and intrinsic curiosity at levels that would serve them well as professors. These people could have chosen any profession, and we are lucky to have them in dentistry. Others (Cell B) discover themselves ill-suited to dental practice in its entirety, which means running a business as well as taking care of patients. Those represented by Cell B can do quite well in an academic environment and may, on occasion, be able to stimulate students to want to emulate them but, in general, are unlikely to do so. Cell D is where the vast majority fit, probably because this is the group we consciously select for and who are attracted to dental school in the first place: individuals well suited to practice but not to academics. And then, inevitably, there are the mistakes: Cell C, those not suited for either practice or academics.

Interestingly, some from each of these groups do eventually gravitate toward academics; the question is when? Category C individuals exploit quite early the relatively forgiving institutional culture of academic life, especially for those not pursuing promotion and tenure, but they are not positive role models for students, in fact, quite the reverse. Cell D people gravitate to academics in retirement, post-military, or when partially disabled. Their willingness to teach when other options either have been closed to them or have run their natural course does not automatically make them suitable to teach. Category A people come late, if ever, to academics—their interests and capacities being such that they are likely to migrate into many other activities, including organized dentistry, or into new initiatives apart from either dentistry or education.

Is this mental construct helpful in consciously deciding how we recruit into dental education? I think it could be, because among the four categories (and recognizing that there is a lot of blending among them) the most effective role models are the Category A individuals—but only if such people can be captured into academic careers early, recalling Kushner's¹⁵ observation that the best role models are people who are just a bit older than the prospective protégé. The bad news is that getting Category A people to choose full-time academics early is not easy. The good news is that we do not need very many of them. The effect of even one or two such individuals in a faculty can be transformative, drawing students into academics who might otherwise not have considered it. Thus, the influence of one such individual is greatly amplified. Students may understand that they are not actually sure what they

want; but they do trust the decision of someone they can relate to and who has made a similar decision, who appears to be happy with it, and who manifestly enjoys the work.

Some Practical Suggestions

Grayson Marshall²² has advanced some ideas worth considering to capture a greater number of dental students whose temperament might suit them well for an academic career, particularly through the vehicle of the combined D.D.S.-Ph.D. program. Among these are the following:

Enhanced Recruiting. This could be achieved by the directors of conjoint degree programs working directly with D.D.S./D.M.D. admissions committees to identify candidates as early as possible. Efforts should go beyond applicants of dental schools to include pre dental groups touring dental schools or as part of routine outreach efforts made by visits of deans and Ph.D. program directors to undergraduate campuses. Such efforts must also include a few dynamic dental students who are engaged in combined programs and who can serve as charismatic role models for pre dental students.

Dental recruiters should not shy away from recruiting preprofessional health science groups, both pre dental and pre medical. Sending faculty to undergraduate campuses could also be effective, with follow-up either by personal contact or by creating a targeted newsletter sent periodically to pre dental students that continues to imprint and reinforce the academic option. The pre-health professional advisors are critical in this equation.

Full-time faculty members who are scientists must be persuaded to serve on admissions committees. Their presence and influence send a message to both applicants and other members of the admissions committee.

Finances. NIH financing of D.D.S./D.M.D.-Ph.D. programs needs to be encouraged as a high educational priority. To the extent that it is fiscally feasible, dental schools need to enhance stipends for graduate students without, if possible, causing students to lose eligibility for low-interest student loans. In conjoint D.D.S./D.M.D.-Ph.D. programs when the clinical degree is awarded before the Ph.D., the NIH needs to be encouraged to permit postdoctoral stipend levels to apply during the post-D.D.S. phase (as opposed to the lower, predoctoral stipend levels).

To the extent possible, tuition waivers (or tuition supplements) need to be found to allow most

or the entire burden of D.D.S./D.M.D. tuition to be covered.

Practice. It is both natural and exciting for D.D.S./D.M.D.-Ph.D. students to look forward to completing the D.D.S./D.M.D. phase of the program and then be allowed to engage in an intramural practice, deriving direct salary supplements from this source. This opportunity offers great motivation to complete the D.D.S./D.M.D. component of the program in as short a time as possible. The experience at the University of California, San Francisco (UCSF) School of Dentistry confirms that many D.D.S./D.M.D.-Ph.D. students are able, unexpectedly, to complete the D.D.S./D.M.D. component of the curriculum in just four years and that the opportunity to earn practice income provides an exhilarating strategy to cope with the financial struggles they typically encounter. Placing such students into community outreach programs as salaried personnel is also an option.

Teaching as a Moral Vocation

Whatever financial incentives can be put in place to entice students to consider academic careers are a definite bonus. However, the core question remains: what kinds of people can be sufficiently captivated by teaching that they are willing to forgo the income of a dentist-businessman or -businesswoman?

It has become a maxim of the business world that we don't invent our values, we discover them.²³ This might be a good rule of thumb summarizing why those dental students who select academic dentistry as a career choice do so. Former Cornell University president Frank Rhodes has explained this perspective through his eloquent description of teaching as a moral vocation.²⁴ He points out:

A generation or two ago, a professor at a major university would have described himself as a professor or an educator; today, such an individual is likely to describe herself as an engineer, an architect, or a musicologist, and, if pressed, to say that she teaches at such-and-such university. Universities need to restore pride in the role of engineer, architect, or musicologist AS professor. A professor who is not both an expert and an enthusiastic expositor of his or her subject

is a contradiction in terms. A professor who regards his or her teaching load—note the term—only as a means of supporting a career in research [or even worse, of just making a modest income] is an impostor. Any professor worthy of the name must regard teaching as a moral vocation. It is not just courses, after all, but people who inspire, transform, and redeem. In short, professors must be not only instructors but also . . . coaches, guides to the territory, and role models.

This is a completely different job from that of being a dentist in an office, and it is one that will resonate with some but not with others. Correspondingly, the kind of person for whom a faculty position in a university holds genuine appeal will be a fundamentally different kind of person from one who sees herself or himself caring for patients hour after hour in a practice setting. The two jobs are both important and they do overlap, but they are more different than they are alike and they should be expected to attract a different subset of people. Configuring dental education in a way that exclusively favors the recruitment and education of one subset is almost guaranteed to yield a shortage of the other.

“Because of its profound impact upon both the individual student and society,” according to Rhodes, “teaching can never be just a job, however demanding; not even just a career, however professional. To the best professors, teaching is a moral vocation. It is moral because it seeks to develop not only comprehension, but also commitment; it influences and shapes not only the intellect, but also the will; it involves the cultivation of not only the mind, but also the heart . . . it is a vocation because it is a calling and not simply a job.”²⁴ This high aspiration speaks to some people and not to others.

At its best, the role of professor should resemble “a coach who encourages, trains, inspires, and prepares the student for the contest; who establishes the goals, initiates the team into both the rules and the spirit of the game, designs and calls the plays, and develops intensity, commitment, and spirit; who instills confidence in the ability and skills of his or her team; and who brings out the best in both individuals and the team, welding the differing skills and the various needs of individuals into an effective, organized whole.”²⁴ Again, this is not better or worse than being a practicing dentist; it is just a completely different job. The key question we as dental educators have

to ask ourselves is this: do we want to encourage a subset of dental school applicants with this particular aspiration? If we do, then we have to bear in mind that our job as educators is not to try to talk students into becoming professors. Rather, our job (and that of all of higher education) is to help students discover something about themselves—and a possible passion for teaching is one of those things. THAT is the business we really are in.

REFERENCES

1. Levitt T. Marketing myopia. *Harvard Business Review*, September/October 1975:26-48.
2. DePaola D. Scientific discovery and integration of knowledge: best practices of principles that will lead to future curriculum. ADEA 48th Annual Deans' Conference in conjunction with the Council of Sections, San Diego, CA, November 4-7, 2006.
3. Grossman L. *Codex*. New York: Harcourt Inc., 2005:43.
4. Bertolami CN. Rationalizing the dental curriculum in light of current disease prevalence and patient demand for treatment: form vs. content. *J Dent Educ* 2001;65(8):725-35.
5. Livy T. *Ab urbe condita*, Book 1. Foster BO, transl. Henderson J, ed. *The Loeb classical library*. Cambridge: Harvard University Press, 1988:7.
6. Brown LJ. Future adequacy of the dental workforce. In: *Adequacy of current and future dental workforce: theory and analysis*. Chicago: American Dental Association, Health Policy Resource Center, 2005:210-59.
7. Formicola A. Personal communication.
8. Shakespeare W. *Hamlet, prince of Denmark*, Act II, Scene II. In: Adler MJ, ed. *Great books of the western world*. Chicago: Encyclopaedia Britannica, 1993:43.
9. Postman N. *The disappearance of childhood*. New York: Vintage Books, 1994.
10. Born DO, Nelson BJ. Male dentists at midlife: an exploration of the one life/one career imperative. *Int J Aging Hum Dev* 1983-84;18(3):219-35.
11. Rohn J. *The art of exceptional living* (audiocassette), disc 1. New York: Nightingale-Conant Corporation/Simon & Schuster, Inc., 1994.
12. Basalla M. Beyond the ivory tower: FAQ from the lecture circuit. *Chronicle of Higher Education*, March 23, 2007: C2.
13. Bertolami CN. Is it possible to educate students to act ethically? *Global Health Nexus* (New York University College of Dentistry) 2006;8(2):8-15.
14. Goleman D. *Emotional intelligence*. New York: Bantam Books, 1997:45.
15. Kushner H. *When all you've ever wanted isn't enough: the search for a life that matters*. New York: Fireside, 2002:169.
16. *Gates of prayer in weekdays and at a house of mourning*. Chaim Stern, ed. Central California Conference of American Rabbis, 1992. Read at Memorial Service for Lawrence H. Meskin, June 27, 2007, Santa Fe, New Mexico.
17. Albom M. *Tuesdays with Morrie: an old man, a young man, and life's greatest lesson*. New York: Doubleday, 1997.
18. Koh GD. How to help students achieve. *Chronicle of Higher Education*, June 15, 2007:B13.
19. American Council on Education, Commission on the Survey of Dentistry in the United States. *The survey of dentistry: the final report*. Washington, DC: American Education Council, 1961. Cited in Brown LJ, Meskin LH, eds. *The economics of dental education*. Chicago: American Dental Association, 2004:13.
20. Nash KD, Brown LJ. Rate of return from a career as dental school faculty. In: Brown LJ, Meskin LH, eds. *The economics of dental education*. Chicago: American Dental Association, 2004:41-79.
21. Sternberg RJ. Finding students who are wise, practical, and creative. *Chronicle of Higher Education*, July 6, 2007: B11.
22. Marshall G, director of the D.D.S.-Ph.D. program at the UCSF School of Dentistry. Personal communication.
23. Collins JC, Porras JJ. Building your company's vision. *Harvard Business Review*, September/October 1996: 131-43.
24. Rhodes FHT. Teaching as a moral vocation. In: Rhodes FHT, ed. *The creation of the future: the role of the American university*. Ithaca: Cornell University Press, 2001: 58-83.