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Review article

Leadership in an academic discipline

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ABSTRACT

Leading an academic discipline poses moral and ethical challenges, requiring a special set of capabilities. Leadership in a clinical academic discipline involves leading the transformation of education, research, leadership and patient care. Daily struggles within strategic, political and cultural milieu are the norm and effective leaders are able to navigate through these struggles and see opportunities for growth.

1. Introduction

The challenges of leadership are many and varied and leading in an academic discipline requires a special set of capabilities. First and foremost, is establishing a vision for one's academic discipline that has profound meaning derived from moral purity. The profound meaning must impact all of society by solving important problems and the moral purity ensure that leadership actions are driven by the all-encompassing obligation to make the world a better place. As obvious as this sounds, daily struggles within strategic, political and cultural milieu are the norm.

In this chapter, we describe leadership thinking and action in prosthodontics to showcase how leadership in an academic discipline may achieve important and needed change.

2. Leadership in clinical practice

Leadership in a clinical practice setting can present moral and ethical challenges. The necessity to run a clinic at a profit, or to meet performance targets is accompanied by an imperative to treat patients. If the primary "Why" we are in practice is to be profitable then one can see that leadership could assume the appearance of management, with the strategic goal to sell more prosthodontic interventions. True leadership comes with a higher moral and ethical obligation in the oral health care setting and demands a focus on patient needs to drive interventions and outcomes. The imperative for patient focus does not have to result in a decline in profitability but rather can lead to an outcome of enduring sustainability.

Defining the "Why" we are in clinical practice with a moral compass that ensures that patient needs are truly understood is a defining responsibility of true leadership. Once this culture of "patient first" is established within the setting of a clinical practice, it needs to be enshrined within a mission statement for all staff to embrace. The ethics of this practice mission will ensure no conflict of interest. The embracing of this practice culture can lead to intense sustainability in all economic climates.

Clinical decision making evolves from good clinical history and accurate diagnostic judgement. The broad intervention spectrum that now accompanies modern prosthodontic practice and the invasive nature of most prosthodontic interventions, demands a confronting conversation with our patients on the risks and benefits of any recommended intervention. Full informed consent will also be accompanied by a similar risk-benefit conversation about lesser interventions all the way to no treatment. If a clinical practice is in the business of selling interventions, this full and frank conversation can be ethically and morally compromised. True clinical leadership will not be found compromised in this conversation. Any perception of compromise in this critical patient focus area can destroy the fabric of the culture of

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patient focus that has been developed. Trust and integrity are at the core of this culture.

The future of prosthodontics is change, which is accompanied with moral and ethical challenge. This change is currently driven by the digital revolution in the production of prosthodontic devices, diagnostic accuracy through such technologies as CBCT radiography and the marriage of such technologies that has produced guided implant surgery and robotics. It is easy to see that the fascination with this revolution and the high entry costs can result is the risk to succumb to "selling" such technologies to patients. The low risk and high benefit to patients are immense if such technologies are used ethically and with a desire for best practice and enduring outcomes.

If one accepts the notion that the highest-level of moral leadership will ensure that actions and interventions lead to the best outcomes for our patients, identifying those attributes of leadership where an individual will exert a positive influence over a group of individuals (the clinical team) is difficult to accurately define. The knowledge, skills and attitudes a 'good leader' possesses are often relational and context specific [1]. They are also influenced by the prevailing belief system in use within a specific culture but at the same time have universal application.

Personal leadership qualities can include such attributes as self-belief, self-awareness, self-management, a drive for improvement and personal integrity. In any analysis of leadership qualities, the importance of integrity is reiterated. Leadership responsibility embraces the need to set a direction for the practice which encompasses such operational matters as a drive for results, political astuteness, intellectual flexibility and a broad scanning of risks and "seizing" the future. Delivering services within the practice requires ongoing moral leadership. This aspect requires the ability to work collaboratively, empowering others while holding to account, leading change through people, as well as displaying effective and strategic influence over the group.

Leadership is shaped by various individual traits and states. Traits identified as important attributes of a good leader include charisma, intelligence, extraversion, integrity, creativity and self-confidence [2–4]. Others include interpersonal and problem-solving skills and the ability to make difficult decisions [4]. To achieve these behaviours at the highest level is a finite skill. The sustained benefits to patients are immense and the reward to the practice is growth by referral. The culture that accrues within the practice from such leadership is high staff moral and low turnover.

Clinical leadership has been identified as the most important determinant to improve patient safety and quality [5].

3. Leadership in organisations

Some believe that real and lasting change is best achieved through organisations. Organisations function and see themselves through three perspectives and in every organisation one of the perspectives dominates the other two [6]. The strategic perspective is one that is data-driven with an eye to the organisation's decisions that will impact its future. In essence, the organisation is focused on its future and how to use data analytically to create its future. The political perspective is one that is relationship and social network driven with an eye to current activities and repercussions of actions in the here and now. Here, the organisation lives in the present. The cultural perspective is based on traditions and how things have been done in the past and, therefore, the organisation's past plays a large role in its future. Understanding these perspectives and their attributes, and then learning to successfully navigate the environment at hand, is important if one is to be effective at leading. In dentistry, organisations come in two main forms: universities and professional organizations.

3.1. Universities

Universities are interesting ecosystems that have unique properties. While some are highly mission-based and, hence, more likely to be dominated by the cultural lens, many others function through the political lens. In the authors' opinion, few universities are dominated by a strategic lens as future performance is rarely of importance (other than to avoid crisis) because universities rarely have accountability mechanisms in place at the organisational level (tenure is primarily an individual measure not an organizational measure) relative to future performance.

Universities are organized into various units and it is traditional for academic disciplines to remain a major force in the organisational structure of most universities. Each discipline typically is responsible for a portion of the curriculum. Naturally, there is competition among the disciplines for personnel allocation, space, equipment, facilities, staff support, time in the curriculum, number of courses, etc. Unfortunately, at many universities, there is overlap and/or contrast in teaching philosophies and in teaching practices. The curriculum committee or equivalent is responsible for managing these disparities but often they remain due to the competitive spirit of each discipline's leaders who see any change in their discipline's resource allocation as "a lost battle" or "a sign of weakness". The risk is that the curriculum is progressively cluttered with information and activities that are out of date and of little value in a student's education towards being an excellent dentist. A strong leader is aware of which battles to fight (those that need to be won) and those that do not need to be won and manages each scenario to give and take astutely towards a long-term vision for the discipline at the university. An academic discipline with a wise politician leader tends to do well within a university when viewed against the university's metrics.

The Dean - Head of School is responsible for strategic oversight of the university dental setting and adjudicating and assigning resources as he/she sees best. In the long run, if an academic discipline is to be strong within a university, it must meet the constant challenge to stay relevant and to be well-received by students, and if involved in patient care, by patients as well.

3.2. Professional organisations

Professional organisations represent a very different channel of influence within and outside an academic discipline compared to the university setting. Where university settings routinely are inherently competitive with regard to cross-discipline entanglements, professional organizations tend to be collaborative environments. On a positive note, those with a collaborative personality find more opportunity to be comfortable. However, collaboration does not necessarily mean progress. Strong leadership skills are needed to corral individuals for whom the organisation's success may not be his/her primary professional objective and because boards of professional organisations may meet face to face infrequently, possibly only once a year. Therefore, conference calls throughout the year are crucial to keep momentum towards sustained progress. The intentions of those who wish to be active in professional organisations is important to elucidate before they are identified to join the organisation's leadership group. There is a group who wishes to lead to further the organisation and sees their commitment as one of service; these individuals are perfect for a board position. In contrast, there are those who seek the limelight to satisfy their own ego-cravings or sense of entitlement; these individuals, most likely quite successful when assessed by certain non-leadership-associated measures, can destroy a board and significantly hamper an organisation's progress as their own mission is not aligned with the organisation's mission.

The mission of a professional organisation is a key indicator of its raison d'être. Following on, it must have a strategic plan as a guiding path to attaining its mission. One should argue that all units should

have a mission and a strategic plan, and this is true. However, because a professional organisation's leadership team meets infrequently, and each member probably has limited time to spend on the organisation, the mission and strategic plan become more crucial if the organisation is to make progress in the areas it has identified as key areas of activity. It is imperative to lead an organisation based on a solid strategic plan that is adhered to. Many organizations fail to accomplish much because they do not have a clear mission, or they do not have a strategic plan or because they have a strategic plan that they do not follow. It has become fashionable to hold strategic planning sessions and, unfortunately, then ignore the plan and become distracted by activities and programs of low value with regard to achieving the mission of the organisation.

There are two broad mission areas for an organisation. The first is to advance progress within the discipline. This is often accomplished either through educational meetings/lectures/webinars showcasing the latest advances in the discipline and related fields, or by supporting research activities in the field through financial assistance or mentorship. The second is to represent the discipline with the other disciplines. For example, in prosthodontics in the United States, the American College of Prosthodontists is the organisation that represents prosthodontics at the national and international level when it comes time to enhance and/or protect prosthodontics. However, there are many other organisations such as the Academy of Prosthodontics, American Prosthodontic Society, American Academy of Fixed Prosthodontics, Greater New York Academy of Prosthodontics and the Pacific Coast Society of Prosthodontics that serve an important role in supporting education and research within prosthodontics. The large size of the United States is certainly an important element because the regional organisations are as healthy and vibrant as the national organisations that are progressively turning towards international membership to remain viable. Again, an individual is well-served to identify his/her leadership skills and where his/her passion to make a difference lies before entering an organisation's leadership structure. It is advisable to contemplate an organisation's balance of the three perspectives because each of us fits certain environments better.The precious time and effort we dedicate to an organisation is best spent where we fit best, given that the opportunity cost of this precious time and effort is high.

4. Leadership in education

In the last 15 years the field of prosthodontics has undeniably evolved at a much greater pace than ever before. This is due in great part to the work of distinguished "pioneers", in other words, "leaders" who, years ago, took an introspective look at the status of the specialty and its potential for future growth. The incorporation and adoption of technology (to include biomaterial sciences), biology, and evidence-based dentistry among others, has placed prosthodontics at the crossroads of progress in dentistry and has increased its relevance, not only within the field of dentistry, but also with respect to medicine. We now enjoy renewed interest in our specialty from our pool of student applicants. We have become more familiar to the public and colleagues in healthcare, and we now have a greater ability to demonstrate our vision (and affect and influence) to decision makers at the governmental and industry levels. This should NOT be an end in itself! As a matter of fact, while the current mix of technology, evidence-based dentistry and biology has certainly positioned prosthodontics in a desirable place, it will not be long before a new direction will have to be charted. Indeed, it is critical that we embrace a progressive attitude towards change that is not only a trait of current leadership, but one that permeates every level of prosthodontic education - the very crucible where new leadership is identified and nurtured. It starts with us, educators! What is the role then of an educator to lead? It starts with realising that in today's information age, the availability of information is no longer a privilege to the selected few. Information is widely available to the public through the internet (although certainly with caveats related to the reliability of such information) and crucially to our students, who no longer depend on our "dispensation" of knowledge to advance their education. Students now look at us as providers of fundamental values and intellectual tools upon which the abundant availability of information can be channeled, structured, evaluated, and implemented for the benefit of our fellow human beings, in essence, our patients. It implies a vision of a prosthodontic educator who is no longer egocentric, but one of service to the profession and its constituents. We would then think that a historical and inefficient "vertical" approach to education, one in which a professor, an educator, is the sole or principal holder of knowledge has fortunately left the stage for a more "horizontal" efficient, participatory, democratic contribution of several stakeholders to knowledge gathering, evaluation and application. In this sense, while a prosthodontic educator cannot, at least within the scope of current accreditation standards, increase the length of the educational process, he/she can certainly affect the width and depth of such educational processes by identifying, mentoring and leading young and promising students/residents (trainees) to become not just consumers of prosthodontics, but effective stakeholders, leaders, and efficient producers of relevant knowledge. In this sense, leadership in education is key to identify such individuals. It starts with an environment where hard work and study is recognised and rewarded; where fundamental human values of respect for others and justice for our patients are firm and uncompromised; where we look outwards and forward, and where we let the interest, needs and vision of those who will follow us be first in our agendas. We need to affect the present, but most importantly, we must shape the future and realize that, what made us successful, will, most likely, be a drag or a bias for future generations of prosthodontists to thrive.

It is important that we nurture educational paths such as DDS, PhD that will allow us to create the next generation of prosthodontists and scientists who can more easily bridge prosthodontics to the larger biomedical field. We need these individuals, not only to pursue original knowledge, but to be the voice of our mission to 1) the larger biomedical field and colleagues and 2) within scientific funding organizations so that consideration and priority for unanswered questions affecting prosthodontic care receive adequate attention and support.

Leadership in education does not stop or end with the graduation of our students or successful completion of training of residents; it continues with the nurturing of supportive and participatory alumni groups that become an integral part of our educational system at every institution. While these individuals are often the sole interest of university development departments, their contribution can be much more than monetary in nature. These individuals are the natural, willing and invaluable transmission gear of every prosthodontic educators/leader to the "outside" world and can provide precious and timely insights on the relevance of curricula and clinical training to the "real world". They can provide seriously lacking business education and training to our graduates and have a keen interest in the prosthodontic education "brand" that we all cherish. It is therefore critical for a leader in prosthodontic education to recognize that his/her effectiveness will more and more be gauged not only on the sheer amount, elegance or even relevance of information given during education and training of our students/residents, but on his/her ability to foster connections among the different stakeholders in prosthodontic education for the years to come. Ultimately, it is also up to us to recognize that all our careers as educators, not differently from others, will have a rising phase, where output and creativity are abundant, and a plateau, where new leadership should guide prosthodontics to new heights. The identification of such a plateau, the "sweet spot", will ensure the continued growth and expansion of prosthodontics now and in years beyond.

5. Leadership in discipline specific research

Traditional prosthodontic research in fixed prosthodontics, removable prosthodontics, maxillofacial prosthodontics and relevant

dental biomaterials evolved considerably between 1981 and 2000, following the introduction of osseointegration. Since 2000, the development and merging of technological innovations has fostered further evolution through digital applications in prosthodontics. These innovations have led to an explosion of new possibilities in patient care where the boundary between translational research and clinical research has become blurred. The role of prosthodontists in directing what is important to study, how to study it and then to be involved in developmental, laboratory testing and beta-clinical testing of new products and protocols is as active as ever. Since dental companies are routinely the ones pushing the boundaries of technological evolution, a healthy synergy between the dental profession and dentistry industry may facilitate meaningful progress. Conflicts of interest, however, must be managed to leave colleagues and patients sufficiently aware of the relationship of universities and individual scholars with dental companies. However, developments come so quickly that it is not always possible to determine long-term patient-centered outcomes of a new material or protocol because a refined material or technique supersedes and reduces opportunities to publish even three-year clinical outcomes of outdated systems and approaches.

Today, more than ever before, however, prosthodontists are engaged in basic and clinical research that is far beyond the scope of traditional prosthodontics. Many prosthodontists publish in non-prosthodontic and non-dental journals as their research crosses over into biomedical science fields such as cancer, tissue engineering, pain, regeneration and bone biology to name a few. This form of scholarly output integrated with biomedical research is strategically very important for a dental academic discipline to establish relevance for itself in the global scientific community. When a dental academic discipline's research leaders publish in journals with the highest reputations and impact factors, and their own H-indices are comparable to world class researchers, it positions the discipline as having value to humanity beyond what teeth alone contribute. These researchers, who often have pursued PhD education with global leaders in the field, find that they and their work represent a beacon for their dental discipline, establishing vital credibility for the discipline and protecting it from becoming irrelevant.

5.1. Editorship

Because many journals are discipline-focused, editors of scientific journals are important gatekeepers of the nature and quality of the science published in an academic discipline. Today, the release of a new journal is relatively common, compared to past decades, whether by traditional (full peer-review) or non-traditional (open access; variable peer-review) mechanisms. Editors must establish the level of scientific rigor for his/her journal as well as the type of research that the journal will publish, e.g. sub-discipline based (fixed, removable, digital, etc) or by research type (clinical, basic, translational, etc). Following the mission and strategic plan for the journal will lay the foundation for these decisions. Despite the large number of new journals being released and the competition for excellent papers to publish, a new journal may be successful. One example of a new journal that is doing well is the Journal of Prosthodontic Research, established by the Japan Prosthodontic Society in 2009 (https://www.journalofprosthodonticresearch.com/). Through an excellent vision, mission, strategic plan and with outstanding journal leadership, it has already become the prosthodontic journal with the highest impact factor. The journal seeks to publish articles that have multi-disciplinary impact within and outside dentistry. Again, by reaching beyond the traditional border of the discipline, the journal has greater value to the scientific community. Today, publishing in this journal represents an excellent place for scientists to showcase their best research in prosthodontics and related fields.

6. Leadership in leadership

The principles of effective leadership must be distinguished from the principles of management. Whether in clinical practice, university, hospital or corporate/industrial settings, leadership is rarely taught or sought. Nevertheless, setting a course through a clear vision and a mission statement, the "why", is the most crucial "big picture" activity that allows for developing a strategic plan, the "how", that defines the operationalisation, the "what", of our daily activities through systems, processes, protocols, monitoring and iteration. Whereas management skills are pivotal for doing the "what" well, leadership skills are needed for defining the "why" and leading the discussion of the "how" [7].

In prosthodontics, education in leadership is available through the Future Leaders in Prosthodontics (FLIP) 2 to 2.5- day workshop program that is held twice a year, once in North America and once in Europe or Asia. The typical workshop program has 8–12 faculty and 20–24 participants. To date, the seven workshops, FLIP1 to FLIP7, held have exposed future leaders from academics and private practice to leadership education from both prosthodontist and non-prosthodontist faculty. Although no two workshops are identical, topics covered have included negotiation strategy, leading women, building blocks of a successful academic career, creativity, personnel management, recruiting and managing exceptional talent, budgets, being Dean of a dental school, mentoring, building a world class private practice, ethics, identifying one's career anchor, neuroscience of leadership, marketing, financing a practice acquisition, work-life balance and strategic thinking. Feedback from participants obtained through anonymous post-workshop surveys has been extremely positive such as this comment from Dr. Adele Lodi Rizzini "The FLIP4 meeting was very different to any other I had previously attended. The focus was on how to build our career and I have to say none of my previous professors had ever taught me the steps to follow, what to look for and how to achieve it. I think us young professionals sometimes are a bit lost in the right direction to choose and learning from a such talented group of people was extremely motivating". And this comment from Dr. Ziyuan Zhu "FLIP is really different from other workshops. Here, dental knowledge met managerial experience and sparked new ideas. Having intellectual discussions with excellent people coming from all over the world is also helpful to get great experience and self-confidence", confirming both the need for this type of education and the appreciation for it from those who have attended the workshop.

7. Summary

In 2005, Thomas Friedman proposed that "The World is Flat" in his popular textbook. He argued that access to the internet allows individuals anywhere on our planet to have possibilities and opportunities hitherto only available to those in developed technologically advanced nations. An analogous phenomenon is emerging today in dentistry in that digital technology is obfuscating the traditional boundaries between academic disciplines. A movement away from repeated technique-based education in each separate discipline because of digital technologies like virtual reality, augmented reality, navigation-directed surgery and, ultimately, robotics, is revolutionising how dentistry is taught. Ultimately, it will lead to a reconciliation of the academic disciplines such that the dominant disciplines will be those that lead the way technologically and embrace innovations astutely and rapidly. For any discipline to stay relevant, metamorphosis is necessary as seeking to hold on to traditional models of practice, education and research will be the end of the discipline's relevance. Indeed, the concept of an academic discipline may itself be replaced by patient value-based thinking. Here, patient value includes not only the traditional outcomes of appearance, comfort, function and the costs to achieve improvement, but also the elements of the patient experience and risk management to increase the probability of a safe result. Leadership in an academic discipline requires leading the transformation of

education, research, leadership and patient care.

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