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Leveraging NAM's Getting Nurses on Boards Coalition to Promote NAE's Changing the Conversation Campaign

Abstract

As described in reports by the National Academy of Engineering (NAE), engineers and the profession of engineering lack visibility, relevance, and influence with the public. One approach to address this situation is the, "Changing the Conversation," campaign that uses market research techniques to improve the public image of the engineering profession. In related efforts, scientists have developed the, "March for Science," campaign to advocate for the role of science in evidence-based public policy at the local, state, and international levels. In contrast to marketing materials and advocacy campaigns, this article argues that the approach adopted by nurses and the profession of nursing – namely, increasing the number of nurse leaders in pivotal decision-making roles on boards and commissions – is a strategy that should be pursued by engineers to gain visibility, achieve relevance, and influence the public. The profession of nursing offers three advantages as compared to the profession of engineering in terms of effective public engagement, including: 1) trust (i.e., Gallop shows nursing as the "most trusted" profession for 15 years running); 2) gender bias (i.e., the profession of nursing is primarily composed of females, which the engineering profession claims is an important target audience for marketing efforts); and 3) professionalism (i.e., the canons of ethics for nurses emphasize the importance of the patient – and hence the value of the individual – while the canon of ethics for engineers emphasize the importance of the nameless "public" – and hence looses the opportunity to connect personally). Through an ad hoc literature review, this article highlights the similarities among the objectives of nurses who formed the getting, "Nurses on Boards," coalition and the objectives of engineers who formed the, "Changing the Conversation," campaign. And this article argues that positioning engineers as leaders on boards and commissions creates individual proponents who spread the new messages of engineering and ultimately influence the public by creating visibility and demonstrating relevance.

Introduction

In 2002, the National Academy of Engineering (NAE) published a report, "Raising Public Awareness of Engineering," [1] that opened with a sobering executive summary,

> In the twentieth century, engineers and engineering made disproportionate contributions … to the design and development of the infrastructure and technologies that support the nation's global competitiveness, security, and standard of living. … *(emphasis added) Yet as our lives become more and more dependent on technological marvels, we and our elected representatives understand less and less about it.* Most American citizens are poorly equipped to engage in public debate about technology-related issues that may affect their lives; our elected representatives are also poorly equipped to make decisions about technology-based policy issues. To compound the problem, the K-12 educational system does a poor job of teaching math and science to children (and rarely teaches engineering and technology at all). Thus, a new generation of engineers cannot be taken for granted [1].

At least a two-fold message is clear from this report [1], namely: 1) engineers and the profession of engineering lack visibility, relevance, and influence among the public (a topic that will be discussed in this manuscript); and 2) the pipeline of future engineers is in danger (a topic beyond the scope of this current manuscript). The report [1] goes on to explain that despite the investment of millions of dollars annually to promote the public understanding of engineering, there is little evidence that these activities have borne fruit.

In 2008, the NAE published a follow-up report, "Changing the Conversation: Messages for Improving Public Understanding of Engineering," [2] which summarized more than 18 months of effort by public relations experts and engineers to identify and test a small number of messages that show potential for improving the public understanding of engineering. Among the five recommendations presented in the 2008 report, the bottom line is that engineers need to "reposition" the public's understanding of engineering and adopt language that emphasizes the positive impact of engineering in the world (i.e., "helps society") rather than emphasizing the necessary skills (i.e., "math" and "build things") and personal benefits (i.e., "high salary") of a career in engineering. In 2013, the NAE published their final report in this series, "Messaging for Engineering: From Research to Action," [3] which documented experience using test messages to promote engineering (i.e., "Engineers make a world of difference," "Engineers are creative problem solvers," "Engineers help shape the future," and "Engineering is essential to our health, happiness, and safety). In addition to reporting results with test messages, the 2013 report [3] outlined a series of "calls to action." One of these specific calls included identifying and leveraging, "individual proponents who spread the (new) message in one-on-one and group interactions." For the purposes of this current manuscript, it is important to emphasize the critical importance of this call to action – to include individual proponents who spread the message of engineering. Because it is this call to action that is directly addressed by the comparison with the getting, "Nurses on Boards," coalition, described below.

Unfortunately, the lack of visibility, relevance, and influence with the public is not solely a concern for the profession of engineering. Collectively, the fields of science, technology, engineering, and math (STEM) are all suffering from a lack of visibility, relevance, and influence with the public. In an effort to improve the public perception of STEM, the American Association for the Advancement (AAAS) – the world's largest scientific society – has created a number of targeted programs [4]. For example, to increase visibility and relevance the Center for Public Engagement with Science and Technology (CPEST) offers a communication toolkit that, "provid[es] guidance for scientists to build skills to more effectively communicate and engage with public audiences, including ways to apply the fundamentals of communication to scientific topics," [5]. And to increase influence, the AAAS has partnered with the Association of American Universities (AAU) to launch the Engaging Scientists and Engineers in Policy (ESEP) Coalition [6]. ESEP is, "an ad hoc alliance of organizations that have joined together to empower scientists and engineers to effectively engage in the policy making process at all levels of government (federal, state, and local)." The stated goals of ESEP include, "to encourage well-informed policy decisions which: 1) are grounded in scientific principles and knowledge; 2) preserve scientific integrity; and 3) support scientific and engineering research." The bottom line gleaned from these efforts is that the different disciplines within the STEM umbrella need to share best practices across disciplinary boundaries in an effort to bridge the gap – in

communication and trust – that currently separates science-based decision making (and evidence-based practice) from politically-driven public policy formulation and implementation. For the purposes of this current manuscript, it is important to emphasize the high level of public trust in the nursing profession as described below.

The "chasm" between public understanding of tech and public trust of STEM professionals responsible for technological innovation was highlighted recently in Congressional hearings where Facebook CEO, Mark Zuckerberg, attempted to answer questions about tech and the concerns of the public over privacy issues [7] [8]. The "chasm" is also highlighted by the stated desire of STEM professionals to influence public debate and policy as evidenced by efforts such as the "March for Science" campaign [9]. As an example from within the field of engineering, it is useful to explore briefly the current tension between "science-based policy" and "politics" within the profession of environmental engineering and science. In particular, the tension among "engineers" and "policy makers" is highly evident in both the composition of the various boards and commissions that advise the director of the United States Environmental Protection Agency (EPA) [10] and in recently proposed changes to rules entitled, "Strengthening Transparency in Regulatory Science," [11]. Without taking a particular "side" in the political debate, it should be clear to a politically neutral observer from the weight of evidence that the relationship among professionals in STEM fields and the public is strained.

In 2011, the now-named National Academy of Medicine (the then named, Institute of Medicine, IOM) published a report, "The Future of Nursing: Leading Change, Advancing Health," [12] which envisioned a bold future where nurses could bring, "a steadfast commitment to patient care, improved safety and quality, and better outcomes," to serve as, "team members and leaders for a reformed and better-integrated, patient-centered health care system." One of the four key messages of the report was, "nurses should be full partners, with physicians and other health professionals, in redesigning health care in the United States." In other words, nurses and the profession of nursing realized that they needed to leverage their existing visibility and relevance to create influence within the healthcare field and especially within healthcare policy. For the purposes of this current manuscript, it is important to emphasize the similarity among the recommendation by the NAE, namely, "individual proponents who spread the (new) message in one-on-one and group interactions," [3] and the recommendation by the NAM, namely, "nurses should be full partners, with physicians and other health professionals, in redesigning health care in the United States," [12].

But unlike the, "Changing the Conversation," marketing strategies developed by the NAE, nurses and the profession of nursing within NAM have developed a strategy to train-up future nurse leaders [13] who can then exert influence through leadership of policy-focused organizations thereby bringing a nursing perspective to leadership and serving as role models to increase the visibility of nurses through the, getting "Nurses on Boards," coalition [14]. Begun in 2014 to mobilize the approximately three million registered nurses (RNs) in the United States, the goal of the coalition is simple, "10,000 nurses on boards by 2020 where board is defined as a decision-making body with strategic influence to improve the health of communities nationwide – including corporate, government, non-profit, advisory, or governance boards or commissions, panels, or task forces that have fiduciary or strategic responsibility," [14].

The purpose of this article is describe how the resources developed by the getting, "Nurses on Boards," coalition can be utilized by engineers and engineering to meet the "call to action" from the 2013 NAE report, "Messaging for Engineering: From Research to Action," [3]. In particular, this article attempts to describe what may it look like for a member of the American Society for Engineering Education (ASEE) – a professor of engineering – to integrate marketing and advocacy materials as part of research, teaching, service, and extension.

Methodology

The approach used in the construction of this ad hoc literature review was informed by the documented approach of conducting reviews of the health care literature as summarized in Whittemore and Knafl [15] including: i) selecting appropriate citations; ii) performing analysis; and iii) reporting synthesis to increase the generalizability of reported phenomena. The specific approach used in this manuscript follows the, "Top 10 Tips for Undertaking Synthesis Research," [16] which states, "For both clinicians committed to evidence-based practice and researchers wanting to build on and extend the current body of knowledge, synthesizing research provides a powerful tool for determining what we know. Yet, synthesizing the research can be a challenging undertaking." In summary, the 10 tips include: i) seize the moment; ii) assemble a team with the requisite expertise; iii) continue to refine your research question and protocol; iv) dream big and start small; v) review your options and gather your resources; vi) engage your team in making challenging decisions; vii) get organized and stay organized; viii) don't rush, be patient, and persevere; ix) analyze, then synthesize; and finally, x) keep calm, carry on, and remember to celebrate [16]. This current article builds upon and leverages prior lessons learned by the author including discussions of "Using Nursing Theory to Improve the Teaching of Engineering Practice," presented at the 2017 ASEE Annual Conference & Exposition [17] and an online discussion of, "Nursing Should be a STEM Discipline! Author Regards Florence Nightingale as First Environmental Engineer," which appeared in Reflections on Nursing Leadership in February, 2018 [18].

Results

The 2013 NAE report, "Messaging for Engineering: From Research to Action," included a number of calls to action [3]. Of great relevance to the members of ASEE was a call to include a recurring session on "messaging" at the annual ASEE conference and at the yearly Engineering Deans Council Public Policy Colloquium. A search of the ASEE PEER document repository with the phrase, "changing the conversation," identifies a total 214 publications from 2009 through 2017, including: 15 articles in 2009; 19 in 2010; 22 in 2011; 28 in 2012; 26 in 2013; 24 in 2014; 28 in 2015; 25 in 2016; and 27 in 2017. A majority of these articles appear in four divisions, namely:
       1) K-12 & Pre-College Engineering (49 articles);
       2) Liberal Education/Engineering & Society (23 articles);
       3) Women in Engineering (22 articles); and
       4) Educational Research and Methods (20 articles).

Although the majority of the publications are clustered in four divisions, it is encouraging to note that at least one paper with these key words has been published in each of 29 different divisions. Collectively, these results suggest that the membership of ASEE is responding to the 2013 NAE "call to action" [3] and integrating the new messages in engineering education research.

Although efforts at "changing the conversation" within engineering education research as reflected by the conference proceedings of the ASEE Annual Conference & Exposition appear to be steady and consistent, the message of public engagement by engineering faculty at large may be less clear and less consistent. For example, within the field of environmental engineering and science in a January 2018 editorial entitled, "You Say You Want Some Resolutions," [19], David Sedlak, a member of the NAE, opined,

> Resolution 1: Engage the public. As researchers, we have important insights into technical aspects of environmental issues that we want to share with the public. But with so many professional obligations competing for our time and few tangible short-term career rewards for such activities, we often fail to get involved. This year, resolve to tithe 2% of your time to public engagement. This translates to an average of about 1 h per week writing op-ed pieces, giving lecture to community groups, providing *pro bono* support to a civic group – essentially anything that brings you into contact with people who do not know the difference between an IC and GC [19].

But this encouragement towards public engagement in 2018 seems to contradict a prior warning offered in an editorial in September, 2016 entitled, "Crossing The Imaginary Line," [20] in which Sedlak had previously shared,

> When research on environmental problems seems like it is not having enough of an impact, mature idealist turn to outreach. This is convenient from the standpoint of career advancement because academics are expected to engage the community. Advising the local chapter of Engineers Without Borders, giving a talk at a local science museum, and serving on a government advisory panel are all counted by promotion committees. More often than not, the combination of meaningful research, mentorship and a few hours per week of outreach fulfills the need of the researcher to improve the planet. But encouraging forays into the real world comes with unintended consequences as researchers are exposed to situations where the system designed to protect public health and the environment has failed. *(emphasis added) Facing injustice, an idealistic researcher might just step over the imaginary line that separates the dispassionate researcher from the environmental activist* [20].

Collectively, these two editorials raise the specter that when faculty who practice engineering research engage with the public there exists a set of unwritten rules that should be followed… or else (and the consequences are unclear). And some might argue that this "imaginary line" of unwritten rules extends all the way to the process of promotion and tenure as demonstrated in a February 2018 editorial in *Scientific American* entitled, "Universities Should Encourage Scientists to Speak Out About Public Issues," with the important subtitle, "When universities discourage scientists from speaking out, society suffers," [21]. The editorial makes the assertion that the rigors of the tenure process explicitly select against public engagement by faculty

because, "these activities … do not count toward attaining tenure or promotion. The only things that count are publishing research in respected journals, getting grants, teaching, and serving on a university committee. Forget the rest of society," [21].

So, what is the take home message for members of ASEE and engineering faculty in general? Is public engagement to promote the message of the, "Changing the Conversation," campaign a worthy activity? Should faculty seek to be, "individual proponents who spread the (new) message in one-on-one and group interactions," [3] or should faculty avoid these efforts for fear of crossing an "imaginary line," [20]? Are the results of educational research integrating, the "Changing the Conversation," campaign as reflected in ASEE conference proceedings a sufficient response to the call for a recurring sessions on "messaging" at the ASEE conference and at the yearly Engineering Deans Council Public Policy Colloquium, [3] or is still more needed? And practically speaking for engineering faculty, does the practice of evaluating candidates for promotion and tenure recognize the efforts of engineering faculty to engage the public? How much time, treasure, and talent should be invested in public engagement? Finally, and perhaps most importantly, what is the best way to perform public engagement in a manner that ensures "advocacy" while avoiding "activism" or the breaking of "unwritten rules" and the warning shared by Sedlak [20]?

The programs provided by AAAS provide one means of training up professionals in the STEM disciplines [5] [6], but the programs provided by AAAS do not represent the only means. Alternative approaches have been developed by nurses and the profession of nursing [13] [22] [23] [24]. To avoid crossing the "imaginary line" described by Sedlak [18], professionals in the STEM disciplines may wish to turn to peers in the nursing profession. Typically, nursing is excluded from the definition of STEM [25]. Nursing is included within STEM by the United States Department of Labor's Bureau of Labor Statistics, but the department of Immigration and Customs Enforcement does not include nursing as a STEM field when evaluating requests for specialized visas [25]. Perhaps the reason why nursing if often left out of STEM may be traced to the aversion of the National Science Foundation (NSF) to fund "medical sciences" research. Regardless of the reason that nursing is not regularly considered a part of STEM, it would be wise for engineers and the profession of engineering to consider the approaches for public engagement adopted by nurses and the profession of nursing for at least three reasons, namely: 1) trust; 2) gender bias; and 3) professionalism.

First, for more than fifteen years, nursing has been ranked as the most trusted profession in an annual Gallop poll [26]. And while engineers and engineering professors are not explicitly included in the list of professions evaluated by Gallop, it is interesting to note that nurses are considered the most honest and ethical by 82% of the US population – as compared to only 71% for military officers; 66% for grade school teachers; and 65% for medical doctors – the professions in second, third, and fourth place, respectively. The public interacts with nurses on a regular basis, and the results collected by Gallop strongly suggest that many professions – and likely even engineering – could benefit from adopting behaviors of nurses that gain public trust.

Second, nursing is a profession with a disproportionate number of female professionals. For example, according to October 2017 data from the Kaiser Family Foundation a total of 4,153,657 nurses are professionally active in the United States, and of this number only 337,077 (or 8.1%)

are male [27]. As described in the NAE reports [1] [2] [3], the male gender bias of engineering is believed to contribute to the difficulty in engaging the public. If a part of the reason that the "new" messages for engineering are "working" is because they adopt a "neutral" or "female" stance, then it follows that adopting messaging from within the profession of nursing may also be attractive to those who are attracted to the "new" messages for engineering because the profession of nursing is predominantly female.

Third, the Code of Ethics for Nurses published by the American Nursing Association (ANA) includes as Provision 3, "The nurse promotes, advocates for, and protects the rights, health, and safety of the patient," [28]. Thus, nursing and advocacy are inseparable, and engineers looking to engage the public as advocates would be wise to learn from nurses. In contrast, the Fundamental Canons of the Code of Ethics for Engineers maintained by the National Society of Professional Engineers (NSPE) states, "Engineers, in the fulfillment of their professional duties, shall: 1) hold paramount the safety, health, and welfare of the public," [29]. Thus, while nurses and the profession of nursing are promoting their personal relationship with patients the profession of engineering and engineers are relying upon the nameless "public" as the benefactor of professional efforts.

Discussion

So if the argument stands, and engineers and the profession of engineering have something to gain in promoting the, "Changing the Conversation," campaign, how can these efforts leverage the lessons learned from getting, "Nurses on Boards," coalition? A verbatim recapitulation of the varied materials available on website maintained by the getting, "Nurses on Boards," coalition is beyond the scope of this manuscript, but a summary of some key points are included, below (https://www.nursesonboardscoalition.org/):

1. Nurses are uniquely qualified to serve on boards and commissions. Board skills include comfort with public speaking, a knack for negotiating, social etiquette proficiency, knowledge of Roberts Rules of Order, and an understanding of financial statements. Resources are available to help nurses hone board member skills [30].
2. Being a member – and the only nurse – on the Blue Ribbon Panel on Vice President Joe Biden's National Cancer Moonshot Initiative, announced during President Barack Obama's State of the Union Address, I have been asked to share my experience. I will do that, along with sharing how I became prepared for that role and discussing how you, too, could become involved in similar activities [31].
3. Board Service Readiness Quiz available from http://boardsource.org:
    i. I am interested in advancing a cause that I feel passionate about.
    ii. I am curious to delve into and learn about issues facing my community and the world.
    iii. I am interested in a new environment and experience to further develop myself as a leader.
    iv. I am interested in meeting people outside of my usual professional and social circles.
    v. I understand the roles and responsibilities of being a board member.

<ol type="i" start="6">
I am comfortable making a personal contribution to the organization.
I can imagine asking others to contribute financially to a cause that I am passionate about.
I have enough autonomy in my schedule to accommodate board and committee meetings.
I am patient and collegial when working as a team.
I can commit the time necessary to be an exceptional board member.

4. Video: Leading Change Through Board/Committee Appointments available at: https://youtu.be/mDFBsncoKHY recorded at the Future of Nursing: Campaign for Action Leadership and Legacy Summit, Phoenix, AZ, 22 January 2015.

In 2013, the NAE called for identifying and leveraging, "individual proponents who spread the (new) message in one-on-one and group interactions," [3] and it is clear that the getting, "Nurses on Boards," coalition shares a similar desire to place nurses in positions where they can promote, "patient-centered health care system," [12]. For a member of ASEE – a professor of engineering – the challenge is how to integrate these tools into the engineering classroom, laboratory, and practicum. Previously, the author documented how nursing theory may be used to improve the teaching of engineering practice [32]. In a similar manner, professors of engineering may borrow from the demonstrated success of nurses and the profession of nursing to improve "how" we educate our engineering students. This article highlights the similarities among the objectives of nurses who formed the getting, "Nurses on Boards," coalition and the objectives of engineers who formed the, "Changing the Conversation," campaign. And this article argues that positioning engineers as leaders on boards creates individual proponents who spread the (new) message (of engineering) in one-on-one and group interactions where leaders set a vision and role model attitudes and behaviors that impact large teams of followers.

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