Leadership as an Engineering Responsibility

NSPE Leader Conference and Annual Meeting
July 20, 2013
Ronald J. Bennett, PhD
NSPE survey: Value vs. Preparedness

- Social Sciences
- Market Environment
- Math and Science
- Social/Ethics/Environment
- Integrative Thinking
- Leadership
- Product/System Design
- Teamwork

Well-Prepared vs. High Value
NSPE survey: Value vs. Preparedness

- Teamwork
- Product/System Design
- Leadership
- Integrative Thinking
- Social/Ethics/Environment
- Math and Science
- Market Environment
- Social Sciences
- Well-Prepared
- High Value
- Delta P - V

-80% -60% -40% -20% 0% 20% 40% 60% 80% 100%
Based on your experience, does this data seem accurate to you?

1. YES
2. NO
How much leadership education or training have you had?

A. None
B. Little (5-10 hrs)
C. Moderate (10-40 hrs)
D. Significant (40-100 hrs)
E. Extensive (> 100 hours)
Obligation of the Engineer

As an engineer, I pledge

- To practice integrity and fair dealing
- Make best use of Earth’s precious wealth
- Give my skill and knowledge without reservation for the public good

- NSPE ethics statement
Critical Issues for the 21st Century

Demographic Changes
- Population
- Education
- Food
- Poverty
- Disease

Globalization
- Democracy

Natural Resource Management
- Energy
- Water
- Environment

Infrastructure
- Transportation
- Communication

Security
- Terrorism and War

Breakthrough Technologies
Grand Challenges for the 21st Century

- Making solar energy economical
- Provide energy from fusion
- Develop carbon sequestration methods
- Manage the nitrogen cycle
- Provide access to clean water
- Restore and improve urban infrastructure
- Advance health informatics
- Engineer better medicines
- Reverse-engineer the brain
- Prevent nuclear terror
- Secure cyberspace
- Enhance virtual reality
- Advance personalized learning
- Engineer the tools of scientific discovery

Center for Science, Technology & Public Policy

Bennett & Millam, 2013
Why is leadership important for Scientists and Engineers?

Big Issues of 21st Century

Ethical Obligation

Technical Know-how

Bennett & Millam, 2013
The nature of big issues and change

*Environmental issues are emotional*

Dr. Joe Ling, 3M
The nature of big issues and change

*Environmental issues are emotional*

*Environmental decisions are political*

Dr. Joe Ling, 3M
The nature of big issues and change

*Environmental issues are* emotional

*Environmental decisions are* political

*Environmental solutions are* technical

*Dr. Joe Ling, 3M*
Who better to address these issues?

If the solution to these big issues are technical, who is better prepared to address them than those who are technically educated?

What additional skills will be necessary to address the emotional and political aspects?
Bennett & Millam Model

Steering:
Communications, leadership, initiative, creativity

Power:
Technical skills, math, science, engineering, manufacturing, critical thinking
An important thing to remember

You must be the change you want to see

Mahatma Gandhi
Moving toward your vision

CURRENT SITUATION

GAP

BARRIERS MOTIVATORS

VISION FOR THE FUTURE
Millam Model

MY PERSONAL STRATEGIC PLAN → My Leading & Learning Plan

MYSELF

Who am I?
What Do I Know About Myself?
My Present Situation

Who Will Support Me?

VISION

What Do I Want to Create?
My Ideal Future

WHERE I’m Going

Who
What
Why

Goals...

Milestones...

HOW Will I Get There?

Future “X” Time (When?)

My Values, Attributes
My Leadership Competencies
My EQ, MBTI, Other Data
My Learning Style, Leading Style
My Strengths—Interests
Advice From My Sage
My Expertise
What do you think are the most admired traits of leaders?

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<th>Loyal</th>
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<td>Inspiring</td>
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<td>68%</td>
</tr>
<tr>
<td>Competent</td>
<td>64%</td>
<td>63%</td>
</tr>
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James Kouzes and Barry Posner
Definition of leadership

“Leadership is an interpersonal influence process of setting direction and inspiring others to achieve goals.”
Four steps to leadership

- Exploding the myths
- Finding your inner leader
- Making a difference
- Why the world needs you
Self Reflection

- Beliefs – passions and myths
- Behaviors follow beliefs
- Beliefs come from several sources
  - Family
  - Friends
  - Religion
  - Education
  - Media
• Five strongest themes of talent—may not be your strength yet

• These ‘big five’ point to where you have the greatest potential for a strength

• Combine this set of five with knowledge and skill to build your strength
Emotional intelligence (EQ) is the ability to recognize and understand emotions in yourself and others, and the ability to use this awareness to manage your behavior and relationships.

Bennett & Millam, 2013
EQ vs. IQ

- About 1/3 of star performance in accounted for by IQ, while 2/3 is a function of EQ
- IQ and personality are relatively fixed and can’t be changed significantly, yet
- EQ is flexible and can be developed throughout our lives

Bennett & Millam, 2013
Hagberg Model of Personal Power

1. Powerlessness
2. Power by Association
3. Power by Achievement
4. Power by Reflection
5. Power by Purpose
6. Power by Wisdom

Bennett & Millam, 2013
Millam Model – Developing a Plan

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Bennett & Millam, 2013
Summary: Developing your inner leader

- Reflect on your beliefs
- Do assessments
  - Develop mentors and network
- Develop a leading and learning plan
- Align your actions with your passions
  - Lead from where you are
  - Lead from who you are – be authentic
- Add value to your organization
- Lead in your personal, professional and civic environments
Sustainability – keeping it alive

- Living your passion
- Continued self awareness including social & emotional intelligence
- Instilling new habits aligned with your vision
- Keeping a constant pulse on new ideas, new innovations, and new ways of being
- Serving the public good

Bennett & Millam, 2013
The ‘magic’ is in your mindset

- Developing confidence
- Demonstrating courage
- Becoming a conscious competent
Begin by knowing your authentic self

“Becoming a leader is synonymous with becoming one’s real self. It is precisely that simple and also just that difficult.”

Warren Bennis
Should I wait until I’m perfect?

“No leader is perfect. The best ones don’t even try to be—they concentrate on honing their strengths and find others who can make up for their limitations.”

*In Praise of the Incomplete Leader*

HBR, February 2007

Bennett & Millam, December 12, 2012

Bennett & Millam, 2013
One more thing …

The most important thing to remember is this – to be ready at any moment to give up what you are for what you might become.

W.E.B. DuBois
Thank You

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