AdvanceVT: Institutional Transformation at Virginia Tech

June 8, 2006

Overview

- Institutional context
- Change model
- AdvanceVT overview
- Data-driven change
- AdvanceVT elements
  - Strategies
  - Indicators of change
- Outcomes and NSF indicators
- Future Plans
Institutional Context: Virginia Tech

- Land grant institution
- Historically all male, military until mid-60s
- Eight academic colleges
- 60 bachelor's degree programs
- 120 master's and doctoral degree programs
- 26,000 students in Blacksburg; 28,000 total
- 25% of freshman class in engineering; 12% science
- More than 1000 B.S. engineering degrees awarded annually (8th in the U.S. in 2005 according to ASEE); nearly 500 master's & over 100 Ph.D.'s in engineering

Institutional Context: Virginia Tech

- Restructuring of academic colleges
- New academic leaders
- Creation of Institute for Critical Technologies and Applied Science
- Impact of budget constraints on faculty hiring
2006-2012 Strategic Plan Update
Institutionalizing AdvanceVT Initiatives

- Scholarship Domains
  - Learning
    - Undergraduate Research
    - PhD Growth / Transformative Graduate Education
  - Discovery
    - Energy, Materials, and Environment
    - Social and Individual Transformation
    - Health, Food, and Nutrition
    - Innovative Technologies and Complex Systems
  - Engagement
    - Economic Vitality
    - International Education and Research
    - PK-12 Enhancements in STEM

- Selected Foundation Strategies
  - Diversity
  - Faculty Recruitment / Retention
  - Work life Policies, Dual Career Office
  - Faculty Leadership Development

Institutional Context: Virginia Tech

AdvanceVT initial focus on two colleges:

- College of Engineering
  - 302 Tenured/Tenure-track faculty, fall 2005
  - 39 Women (13%)
  - 4th highest # of women engineering faculty in U.S., according to ASEE
  - 1 Female Associate Dean (+1 at NSF)

- College of Science
  - 191 Tenured/tenure-track faculty, fall 2005
  - 30 Women (16%)
  - 2 Female Associate Deans
Typology of Change

<table>
<thead>
<tr>
<th>Pervasiveness</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Adjustment (I)</td>
<td>Isolated Change (II)</td>
</tr>
<tr>
<td>High</td>
<td>Far-reaching Change (III)</td>
<td>Transformational Change (IV)</td>
</tr>
</tbody>
</table>

Core Strategies
- Sr. Admin. Leadership
- Collaborative Leadership
- Education & Communication
- Flexible Vision
- Visible Action

Indicators of Change
- Attitudinal Awareness Climate
- Structural Policy/Procedures Institutionalization (Funded programs/offices/positions)

Advance Outcomes
- More Women STEM Faculty
- More Women Academic Leaders

Assessment and Evaluation


AdvanceVT Model for Transformative Change

Indicators of Lasting Change
Advance Institutional Transformation Projects

• **Attitudinal Indicators:**
  – Awareness
    • Consciousness-raising
    • Change in discourse, framing of issues
  – Change in climate

• **Structural Indicators:**
  – Change in specific procedures or policies
  – Creation of institutionally-funded program/office/position


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**AdvanceVT Overview**

• Organizational structure
• University-wide initiatives
• Data driven institutional change
• Project elements
• NSF Indicators
• Future Plans
Building University-wide Awareness and Involvement

• Annual University-wide workshop
  – First workshop identified child care and dual career hiring as priority issues
  – Speakers from NSF and other ADVANCE institutions featured at first and second workshops
  – Third workshop held in conjunction with the Mid-Atlantic Conference on the Scholarship of Diversity

Building University-wide Awareness and Involvement

• Increasing connections and visibility among women
  – Networking receptions
  – Visiting speakers
  – Award nominations

• Creating a climate for change
  – Department head development
  – Research and assessment
  – University-wide survey
  – Visible leadership from deans and provost
**AdvanceVT focuses on four elements**

- **Pipeline:** Advancing women into faculty careers
- **Recruitment:** Increasing representation of women and establishing a critical mass
- **Leadership:** Empowering women as leaders and scholars
- **Policy:** Institutionalizing change through policy

**Data-driven institutional change**

- **Key Strategies**
  - Use data to promote change through the activities of each of the four work elements and climate change in general
  - Multiple data sources
    - Surveys
    - Interviews
    - Focus groups
  - Create awareness of need (raise consciousness)
  - Change climate at the departmental level
  - Implement structural change through policy and procedure changes
  - Institutionalize to promote long-term change
Faculty Survey Model Results
Support the Role of Climate

- Individual Characteristics: Rank, Race
- University & Dept. Work Environment: Work & Life Balance Issues
- Attitudinal Outcomes: Job Satisfaction & Intent to Leave
- Behavioral Outcomes: Turnover, Productivity

Factors that Influence Job Satisfaction
Hierarchical Regression Model for Job Satisfaction

- R-Square
- Partial R-Square
- Previous Model R-Square

Variables Added to Model:
- Demographics
- Employment Characteristics
- Worklife Perceptions
Key Findings from the 2005 Faculty Focus Groups

- Resource constraints
- Unclear direction from administration
- Lack of recognition, rewards, compensation
- All time is university time
- Lack of diversity and collegiality
- Lack of flexibility in tenure and promotion
- Lack of mentoring
- Consequences for family life and personal health

"Work becomes the faculty member's life...they neglect family. It is an individual choice...but the university creates a culture that encourages this behavior by not allowing time for anything else if you want to be successful."

Data Supporting the Policy Element: Example

Work-Life Issues Appeared as a Key Finding in Numerous Data Collection Efforts

Data sources:
- Cohort 2001 New Hire Interviews
- Spring 2005 Faculty Focus Groups
- 2002-2004 Exit Survey
- 2005 Faculty Work-Life Survey
- Child Care Needs Assessment Survey
Data Supporting the Pipeline Element: Example

Activity
Group interview with S & E graduate students during spring 2005.

Key finding
Work-life issues, particularly a lack of consideration of family responsibilities was the top concern raised by College of Engineering students.

Outcome
New work-life grants provide money to cover graduate students on paid leave due to childbirth or family emergencies.

Data Supporting the Recruiting Element: Example

Important Components of Startup Package

Graduate Student Support
Equipment/Lab Space
Salary
Teaching Load

Support for their research was important to the majority of new faculty, including graduate student support (64%) and funding for equipment and lab space (91%).
Data Supporting the Leadership Element: Example

I aspire to a leadership position at Virginia Tech beyond my current position (e.g. department chair, center director, dean, etc.)

<table>
<thead>
<tr>
<th>Somewhat or Strongly Agree</th>
<th>Somewhat or Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>Men</td>
</tr>
<tr>
<td>47%</td>
<td>31%</td>
</tr>
<tr>
<td>53%</td>
<td>69%</td>
</tr>
</tbody>
</table>

AdvanceVT focuses on four elements

- Pipeline: Advancing women into faculty careers
- Recruitment: Increasing representation of women and establishing a critical mass
- Leadership: Empowering women as leaders and scholars
- Policy: Institutionalizing change through policy
Mission Statement
Increase the number of women electing to pursue academic careers through empowerment and skill building programs.

Pipeline Element: Strategies

- **Senior Administrative Leadership**
  - VPs for Research & Graduate Studies
- **Collaborative Leadership**
  - Advance Professors
  - Graduate Student Association
  - UMBC
  - Faculty mentors
- **Education & Communication**
  - Seminars & workshops
  - Mock interviews
  - National conference
- **Flexible vision**
  - Focus groups set priorities
  - Post-doc fellowship revised
  - Research faculty focus
  - Links to faculty recruitment
- **Visible action**
  - Work-life grants
  - Transformative Graduate Education
  - Graduate Life Center
  - Invested university, college, & department resources
Pipeline Element: Indicators of Change

Attitudinal

• Awareness & Climate
  – Increased interest in faculty careers among graduate students
  – Increased engagement in professional development & networking
  – Increased university attention to graduate student and post-doc issues

“I believe that AdvanceVT has strengthened my desire to pursue an academic career and allowed me to see it as a more reachable goal. Thank you.”
- 2005 Graduate Student Seminar Participant

Pipeline Element: Indicators of Change

Structural

• Policy/procedures
  – Work-life grants
  – Networking events

• Institutionalization
  – Graduate life center
  – Graduate Education Development Institute
Recruitment and Retention Element: Increase the representation of women

Mission Statement

Increase and sustain the representation of women at all ranks in the Colleges of Science and Engineering.

Recruitment & Retention Element: Strategies

- Senior Administrative Leadership
  - Deans & Department Heads
- Collaborative Leadership
  - Advance Professors
  - Search committees
- Education & Communication
  - Best practices presentations
  - Use of data
- Flexible vision
  - Cluster hiring
  - Pro-active recruitment
- Visible action
  - Change in recruitment advertising
  - Web info for prospective faculty
  - Bias brochure
  - Dual career assistance
  - Investment of university, college, & department resources
Recruitment & Retention Element: Indicators of Change

Attitudinal
• Awareness & Climate
  – Interpretation of reference letters
  – Openness to dual career hires
  – Widening faculty searches
  – Pre-emptive retention actions
  – Early identification of potential candidates

Structural
• Policy/procedures
  – Cluster hiring
  – Certification of candidate pools
  – Target of opportunity hiring

• Institutionalization
  – Dean/Associate dean positions to oversee hiring/diversity
Leadership Element: Empower women as leaders and scholars in science & engineering

Mission Statement

Increase the number of women in administrative and technical leadership positions in the Colleges of Engineering and Science.

Leadership Element: Strategies

- **Senior Administrative Leadership**
  - VPs, Deans & Department Heads
- **Collaborative Leadership**
  - Advance professors
  - Faculty mentors
  - Work group participants
- **Education & Communication**
  - Individual meetings with department heads
  - Department head roundtable
- **Flexible vision**
  - Revised approach in year two
  - Skill development workshops
  - Expanded beyond colleges of science and engineering
- **Visible action**
  - Visiting scholars
  - Research seed grants
  - Leadership fellowships
  - Matching funds from colleges & departments
Leadership Element: Indicators of Change

Attitudinal

• Awareness & Climate
  – More women aspire to leadership roles
  – Increased interest in developing leadership skills
  – Succession planning
  – Increased understanding of grant solicitation process

“The [AdvanceVT leadership development] program has prepared me to pursue positions and I have started to look. I feel like I am coming from a place of strength in pursuing a leadership position.”
- 2005-06 Leadership Development Program Participant

Leadership Element: Indicators of Change

Structural

• Policy/procedures
  – Expanded part-time leadership opportunities at college & university level

• Institutionalization
  – University leadership development program
Policy Element: Changing the way we do business

Mission Statement

Promote policy change to remove barriers to success, and nurture the development of every faculty member to their fullest potential.

Policy Element: Strategies

- **Senior Administrative Leadership**
  - BOV, President, Provost, VPs, Deans & Department Heads
- **Collaborative Leadership**
  - Associate Provost
  - Human Resources
  - Faculty Senate
  - Commission on Faculty Affairs
  - Work group members
  - Sloan, ACE
- **Education & Communication**
  - New department head orientation
  - College & university presentations
- **Flexible vision**
  - Faculty focus groups
  - Adapting external models
- **Visible action**
  - New and revised university policies
  - Brochures and web sites
  - Reports on child care, use of stop-the-clock policy, exit survey
  - Investment of university resources
Policy Element: Indicators of Change

Attitudinal
• Awareness & Climate
  – Pro-active engagement by department heads in stop-the-clock and dual career situations
  – Increased requests for stop-the-clock & dual career assistance
  – Increased cross-college collaboration on dual career hiring
  – Men more open to Advance issues
  – Belief that the university is committed to work-life issues

Policy Element: Indicators of Change

Structural
• Policy/procedures
  – Dual career hire guidelines
  – Stop-the-clock policy revision
  – Modified duties policy
  – Directive on external letter requests for P&T
• Institutionalization
  – Dual career assistance office
  – Dedicated funding for initiatives
  – Day care
Outcomes to Date:
How to Measure Progress?

• NSF Outcome Indicators:
  – Faculty by appointment type, rank, and gender
  – Tenure and promotion outcomes by gender
  – Years in rank by gender
  – Time at institution by gender
  – Number and % women in leadership positions
  – Women holding professorships and chairs
  – Composition of promotion and tenure committees
  – Salaries
  – Space allocation
  – Start up packages

New Directions: Next Two Years

• Department Climate
  – Core values
  – Mentoring
  – Collaboration & networking opportunities
  – COACHE survey of untenured faculty
• Diversity
  – Women of color
• Research Faculty & Post-docs
• Follow-up survey
• Expanded participation on leadership team
Women Faculty at Virginia Tech by College, Fall 2005

* Total percentage of women in tenure track positions within college

Tenured and Tenure Track Women Faculty at Virginia Tech: College of Engineering and College of Science

Columns represent women College of Engineering (left) & College of Science (right) by year; within column bars report Professors (top), Associate Professors (middle), Assistant Professors (bottom)
New Full-Time, Tenure-Track Women Faculty at Virginia Tech

Women Full Professors at Virginia Tech
### Virginia Tech Distinguished Professorships & Chairs, June 2006

<table>
<thead>
<tr>
<th>Academic College</th>
<th>Endowed Professorships</th>
<th>Distinguished Professorships</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>W</td>
</tr>
<tr>
<td>Agriculture &amp; Life Sciences</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Architecture &amp; Urban Studies</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Business</td>
<td>23</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>42</td>
<td>1</td>
</tr>
<tr>
<td>Liberal Arts &amp; Human Sciences</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Science</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Vet Med</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>University Total</td>
<td>100</td>
<td>4 (3.8%)</td>
</tr>
</tbody>
</table>

Faculty who hold both an Endowed Professorship and an ADP/UDP Professorship are included within the Distinguished Professorships count only.

### Virginia Tech Department Heads

#### June 2006

<table>
<thead>
<tr>
<th>Academic College</th>
<th>Department Heads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
</tr>
<tr>
<td>Agriculture &amp; Life Sciences</td>
<td>9</td>
</tr>
<tr>
<td>Architecture &amp; Urban Studies</td>
<td>4</td>
</tr>
<tr>
<td>Business</td>
<td>6</td>
</tr>
<tr>
<td>Engineering</td>
<td>11</td>
</tr>
<tr>
<td>Liberal Arts &amp; Human Sciences</td>
<td>12</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>4</td>
</tr>
<tr>
<td>Science</td>
<td>8</td>
</tr>
<tr>
<td>Veterinary Medicine</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total Academic Colleges</strong></td>
<td><strong>56</strong></td>
</tr>
</tbody>
</table>
Virginia Tech College and University
Administrators, June 2006

• 3 Female Vice-Presidents/Vice-Provosts
  – Development, Student Affairs, Graduate School
• 2 Female University Center Directors
• 1 Female Academic Dean
  – Agriculture
• 6 Female Associate Deans
  – 2 in College of Science
  – 1 in College of Engineering
    • +1 at NSF
  – 1 in College of Business
  – 2 in College of Liberal Arts & Human Sciences

Women Faculty at Virginia Tech:
Ready to ADVANCE!