Creating Organizational Commitment and Structured Programs in Academia to Advance Academic Leaders in STEM

Joyce Y. Wong, PhD
Professor Biomedical Eng & Materials Sci and Eng
Inaugural Director, ARROWS

STEM Gender Equality Congress 2017
Task/Charge:

Establish umbrella program to
  • increase level of inclusiveness in STEM
  • support women in STEM at all levels

Unite groups on campus and identify gaps:
  • e.g. WISE (faculty), GWISE (graduate), WISE-UP, WISE@Warren, Artemis, Summer Pathways
How to engage stakeholders with varying interests?

• Deans
• Chairs
• Faculty
• Staff
• Students
How can you effect change?
Project Management Toolbox:

Bublu Thakur-Weigold

Implementation Roadmap:

- drive organizational change in structured way
- focus on results rather than activity
Memorandum of Understanding (MOU)

1. Problem statement with data
2. Why important to solve problem?
3. Possible root causes
4. Hypotheses for these root causes
5. Project objectives
6. Project resources and timeline
MOU: Problem statement with data

• **Too Few:** Women STEM faculty, especially at full professor and in leadership positions
  - Department Chair, Associate Dean, Dean

• **Too Unclear:** What is required for promotion from associate professor to full professor level?

• **Too Uniform:** Diversity of thought => solve complex problems => pursue high impact problems
  - Raise institution’s visibility as institution of excellence
  => attract more talent
MOU: Problem statement with data

Physics (Projected Academic Year 2016)

- **Full**: 31 (Male: 3, Female: 0)
- **Associate**: 2
- **Assistant**: 3 (Male: 7, Female: 1)

2013 STEM PhDs: 1544 (Male: 1186, Female: 358)
MOU: Why important to solve problem?

• Define ARROWS not as equality or fairness, but
• to retain talent to ensure long-term competitiveness of University
⇒ Makes objective universally important to all stakeholders
⇒ Answers the question “Why is it important to solve this problem today? What is the cost of doing nothing?”
MOU: Possible root causes

Cultural Effects:
• Women may perceive themselves as not ready or qualified for promotion
• Women tend not to self-promote because they believe their scientific output speaks for itself
• Women may suffer from unintentional bias from men and women

Institutional Effects:
• Ensure consistent, documented, transparent, and widely shared processes
  • Faculty search and selection
  • Promotion to full professor level
• Collect data to determine root causes
MOU: Hypotheses for root causes

• Talent pipeline (ugrad -> grad -> postdoc -> faculty) is “leaky” and needs to be “patched” so talent is realized

• Women in STEM faculty may feel that they are not ready for a full professor position

• Women in STEM faculty may feel they are not qualified for leadership positions and may not nominate themselves for these leadership positions

• **Note:** many leadership positions require full professor rank

• Candidate pool (PhD-level) for women in STEM faculty is too small to begin with and continues to decrease as you go up in rank
MOU: Project objectives

Implement processes and policies to ...

• Assure Boston University’s long-term quality by attracting best talent to BU, regardless of gender, age, race, and other differentiating characteristics

• Increase number of BU STEM women faculty to levels that at least match the pool at all ranks

• Increase number of BU STEM women in leadership positions

• Increase numbers to have highest women STEM faculty ratios among our peer institutions

Metrics

• Increase female faculty candidate pool and hires to match nationwide statistics at all ranks

• Compare data: time for promotion to full professor before and after policy implementation
MOU: Project objectives

Implement processes and policies to ...

- Assure Boston University’s long-term quality by attracting best talent to BU, regardless of gender, age, race, and other differentiating characteristics
- Increase number of BU STEM women faculty to levels that at least **match the pool** at all ranks
- Increase number of BU STEM women in leadership positions
- Increase numbers to have highest women STEM faculty ratios among our peer institutions

Metrics

- Increase female faculty candidate pool and hires to match nationwide statistics at all ranks
- **Compare data**: time for promotion to full professor before and after policy implementation
Develop a Course of Action:

• **Stakeholders**: women in STEM faculty (associate and full professors)
  • Tapped collective intelligence

• **Design workshop**

• **Focus** on 3 Key Processes
  • Career Plans
  • Sponsors
  • Faculty Hiring Process
Develop a Course of Action:
Roadmaps

ARROWS Faculty Hiring Roadmap (Aug 2015 – Jun 30, 2016)

- Buy-in from top-level administration
- Quality staff support
- Accelerators
  - Time -3
  - Time -2
  - Time -1
  - Time 0
- Career Plans
- Sponsors
- Hiring Process
- Barriers
- Resistance of key stakeholders
- Who will develop and do this new training?
- Obstructionist faculty
- Deans & chairs have bought into BU Best Practices for hiring

ARROWS Vision
Achieved departmental gender goals (based on pool) & target satisfaction ratings by 2020
Roadmap Tracking:

Roadmap 1: Career Plans

Roadmap 2: Sponsors

Roadmap 3: Hiring Process

Progress Tracking

Action Plan for Roadmap: Career Plans / Sponsors / Hiring Process

<table>
<thead>
<tr>
<th>Task</th>
<th>Owner</th>
<th>Due Date</th>
<th>Sponsor Approval</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
</table>

Action Plan for Roadmap: Career Plans / Sponsors / Hiring Process

<table>
<thead>
<tr>
<th>Task</th>
<th>Owner</th>
<th>Due Date</th>
<th>Sponsor Approval</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
</table>

Action Plan for Roadmap: Career Plans / Sponsors / Hiring Process

<table>
<thead>
<tr>
<th>Task</th>
<th>Owner</th>
<th>Due Date</th>
<th>Sponsor Approval</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
</table>

Action Plan for Roadmap: Career Plans / Sponsors / Hiring Process

<table>
<thead>
<tr>
<th>Task</th>
<th>Owner</th>
<th>Due Date</th>
<th>Sponsor Approval</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
</table>

Look What’s Happening!
Roadmap Tracking:

Roadmap 1: Career Plans

Roadmap 2: Sponsors

Roadmap 3: Hiring Process

Progress Tracking

ARROWS
Moving STEM Forward

Action Plan for Roadmap: Career Plans / Sponsors / Hiring Process
Monthly Review Date
Task | Owner | Due Date | Sponsor Approver | Status | Comments
--- | --- | --- | --- | --- | ---

Action Plan for Roadmap: Career Plans / Sponsors / Hiring Process
Monthly Review Date
Task | Owner | Due Date | Sponsor Approver | Status | Comments
--- | --- | --- | --- | --- | ---

Action Plan for Roadmap: Career Plans / Sponsors / Hiring Process
Monthly Review Date
Task | Owner | Due Date | Sponsor Approver | Status | Comments
--- | --- | --- | --- | --- | ---

Look What's Happening!
## Roadmap Tracking:

### Action Plan for Roadmap: Career Plans / Sponsors / Hiring Process

**Monthly Review Date:**

<table>
<thead>
<tr>
<th>Task</th>
<th>Owner</th>
<th>Due Date</th>
<th>Sponsor/Approver</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Example Career Planning Events:

**ARROWS Lunches with Leaders** – program first introduced by BU WISE

**ARROWS Associate-to-Full Professor Workshops**
- 1st CAS Fall’16; 1st ENG Spring’17 + follow-up CV workshops
- **Owners**: College Faculty Actions
- **Approvers**: Deans; Associate Provost Faculty Actions
- **Workshop Participants**: Full Profs (CV reviewers); Associate Profs (receive feedback)

**ARROWS Media Training**

**Leverage:**
- BU Public Relations office
- BU & Alan Alda Center (Communicating Sci)
Example: Faculty Recruitment Processes

ARROWS Abridged Faculty Hiring Guide
Prepared Spring 2017 with Jen Sheridan (Univ Wisconsin)
Rolled out Fall 2017 hiring cycle: Associate Provost Faculty Actions
orientation for faculty search committee members

Unconscious Bias Training
BU Department of Electrical and Computer Engineering Fall 2015 hosted
Cornell Theater Troupe
BU Department of Physics Spring 2017 planned to host Cornell Theater
Troupe – rescheduling due to inclement weather

ARROWS Faculty Recruitment Meetings
Program first introduced by BU WISE:
At least 1 female STEM faculty member outside of hiring dept meets
informally with faculty candidate
ARROWS Resurrected program Spring 2016 and has continued, but not
all STEM departments took advantage of program
Need to expand to other STEM departments: testimonials and metrics
“Thanks much for contributing to this recruitment effort. I think this is a highly valuable contribution to our recruitment efforts.” [BU STEM Dept. Chair]

- Faculty candidates comment on the importance of community
ARROWS faculty recruitment: *Metrics*

**Physics (Projected Academic Year 2016)**

- **Full**
  - Male: 31
  - Female: 3

- **Associate**
  - Male: 2
  - Female: 0

- **Assistant**
  - Male: 3
  - Female: 1

- **2013 STEM PhDs**
  - Male: 1544
  - Female: 358

**Male** | **Female**
---|---
31 | 3
2 | 0
3 | 1
1544 | 358
ARROWS faculty recruitment: Metrics

Physics (Projected Academic Year 2018)

- **Full**
  - Male: 30
  - Female: 3

- **Associate**
  - Male: 3
  - Female: 1

- **Assistant**
  - Male: 5
  - Female: 3

- **2015 STEM PhDs**
  - Male: 1544
  - Female: 378

[Graph showing male and female distribution across different categories]
ARROWS Annual Lecture: Building Community
“You can’t be what you can’t see”

Remark from Laurie Leshin (President of WPI) at BU GWISE luncheon.
“You can’t be what you can’t see”

Remark from Dr. Laurie Leshin (President of WPI) at BU GWISE luncheon.

1990-2011

1992 NASA Selection Group
Dr. Catherine (Cady) Coleman
Chemist and astronaut

Dr. Sally Ride
Physicist and astronaut
First American woman in space 1983
**Why should we care?**

*Imagine:*

*You are asked to lead a task force to solve ...*

*By the way... you can’t use half the collected intelligence.*

*Women > 50% population, but ~ 16-20% leadership positions (even lower for STEM in academia)*

*Adapted from Marie Wilson, Founder and President, The White House Project*
Boston University ARROWS: Advance, Recruit, Retain & Organize Women in STEM

Roadmap 1: Career Plans

Roadmap 2: Sponsors

Roadmap 3: Hiring Process

Progress Tracking

http://www.bu.edu/arrows