


## The Leaking Pipeline: Small Changes and Big Reforms In The Workplace To Retain Women In Engineering



Errin Evans, CMRP



- 2.5 Years Reliability Engineer and Asset Strategy Management Consulting with ARMS
  - Working across refining, chemical, upstream/exploration, and pharmaceutical industries
- 10 Years Petrochemical Industry
  - 9 Years Same Company working in Chemical Plants in Louisiana
  - 3 Years as an alternating term Co-Op with a Petrochemical Company in Baytown, TX

- Christian
- African American
- Woman
- Mechanical Engineer
- Crafter
- Wife and Mom
- Musician (12 Years French Horn)
- Singer
- Millennial

- Passionate about College and Career Readiness
  - Served on Advisory Council for High School Engineering Program
- Served as Diversity Liaison
  - New Professionals Network
  - African American Network
- Partnered with Other Corporate Affinity Networks
  - Latinx, GLAD, Women Networks
- Currently work for a small company with a defined culture with a quickly growing team

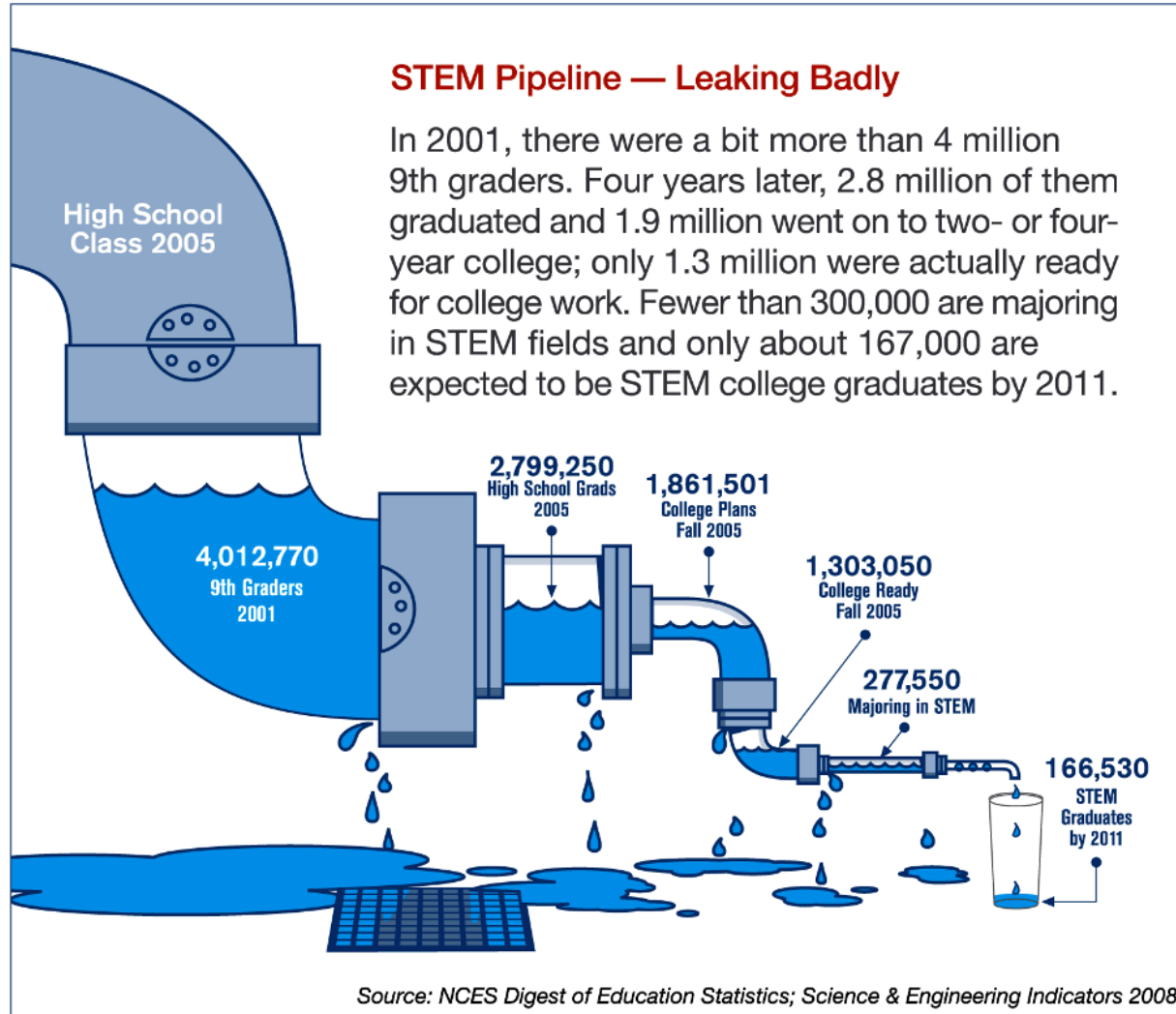
- On the surface, I worked for a company with great mission/values on paper
- However, peers and leaders would share with me about theirs and others' experiences
  - “In the room” but feeling like uninvited guests or unacknowledged guests;
  - Challenged when their groups were not held to the values/mission the company championed;
  - Sometimes drawing the incomplete conclusions about their own capabilities.

- Site Liaisons were privy to hiring and retention numbers for the demographics we supported
- “Diversity hires” increased in number
- Representation across technical/leadership workgroups did not increase
- Hypotheses:
  - We were either hiring a proportionate number of non-minority/underrepresented groups *or...Diversity hires are replacing people who look like them.\**
  - *Workplaces have established diversity without championing inclusion.*

- This presenter is *not* suggesting that everyone who leaves STEM is “a leak to fix” ...
  - Members of underrepresented groups *can* be bad fits and/or ineffective employees
  - Downsizing affects all demographics
  - Some people choose to leave for other/better opportunities
  - Others choose to shift focus for a while and later choose not to return
- This presenter defines leaks as those who wish to thrive in STEM and are opposed by the same old patterns

## STEM Pipeline — Leaking Badly

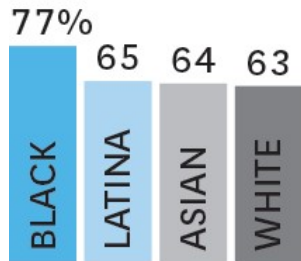
In 2001, there were a bit more than 4 million 9th graders. Four years later, 2.8 million of them graduated and 1.9 million went on to two- or four-year college; only 1.3 million were actually ready for college work. Fewer than 300,000 are majoring in STEM fields and only about 167,000 are expected to be STEM college graduates by 2011.



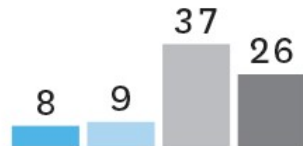


## PERCENT OF U.S. WOMEN IN STEM WHO REPORT...

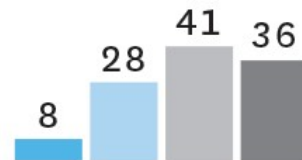
having to provide more evidence of competence than others to prove themselves.



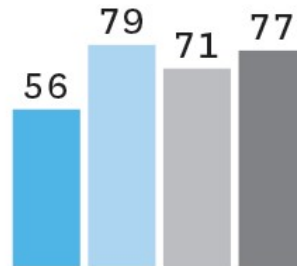
that colleagues have suggested they should work fewer hours after having children.



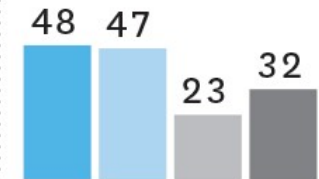
that at work, they find themselves pressured to play a stereotypically feminine role.\*



that women in their work environments support one another.



they've been mistaken for either administrative or custodial staff.



\*SUCH AS "OFFICE MOTHER" OR "DUTIFUL DAUGHTER."

SOURCE JOAN C. WILLIAMS, KATHERINE W. PHILLIPS, AND ERIKA V. HALL

HBR.ORG

[Harvard Business Review: The 5 Biases Pushing Women Out Of Stem](#)

## The 5 Biases From the Previous Slide

- Pattern 1: Prove-it-Again
- Pattern 2: The Tightrope
- Pattern 3: The Maternal Wall
- Pattern 4: Tug-of-War
- Pattern 5: Isolation

[Harvard Business Review: The 5 Biases Pushing Women Out Of Stem](#)

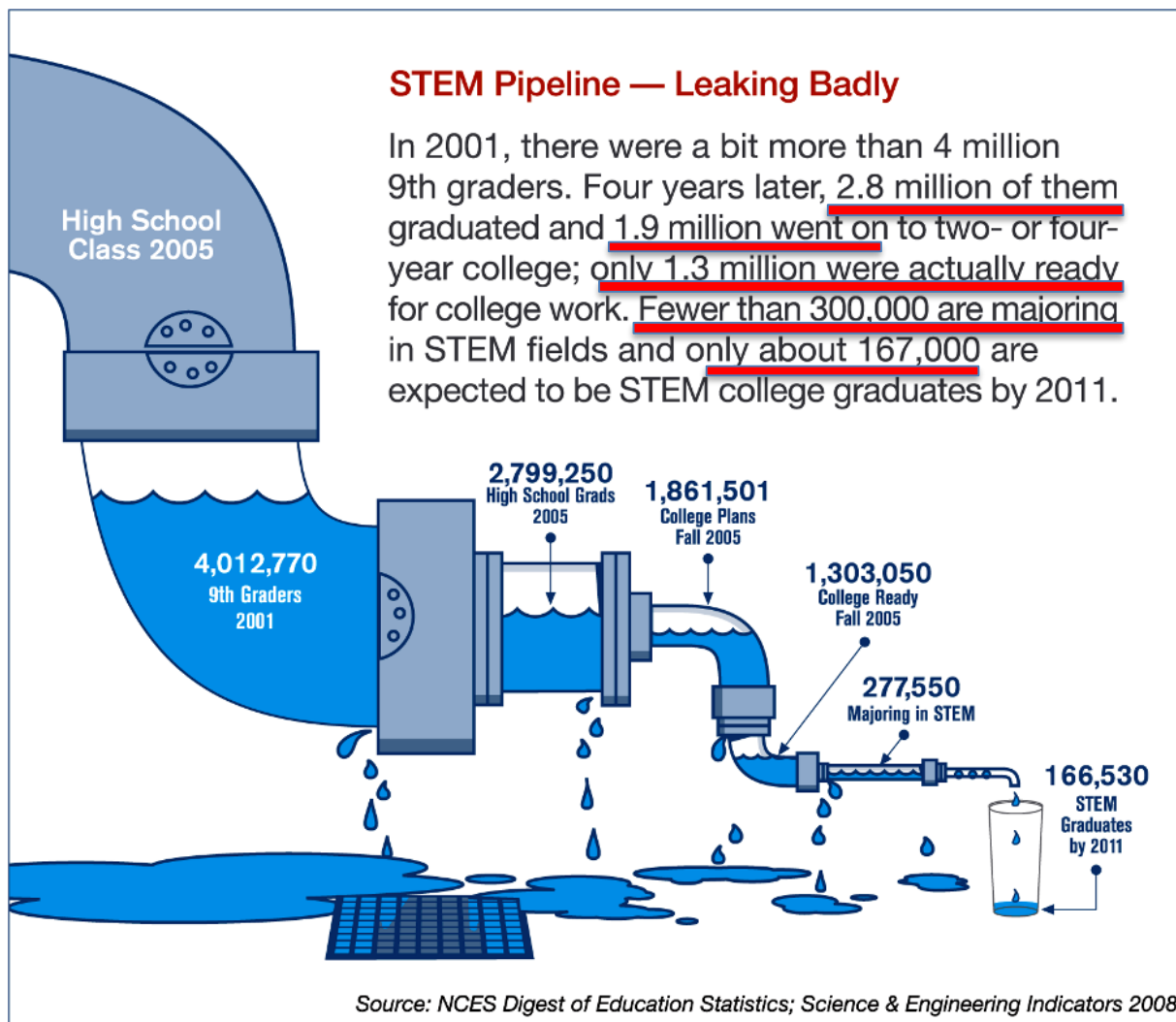
[Double Jeopardy? Gender Bias Against Women of Color in Science](#)

- I would guide them first through defining their performance requirements:
  - Function
    - Pipeline moves product required.
  - Function *and* Performance Standard
    - Pipeline moves product, it holds pressure up to 150psig, can support the design rate of flow without restriction, its wall thickness within the corrosion allowance per design, without environmental impact to its neighbors.
- The latter affords a better understanding of the functional failure, a partial or total loss of the performance requirement.

- The functional failure can then be defined as losing all or part of the performance standard;
- The “failure modes” causing the failure are identifiable;
- The effect, or impact of failure mode may be assigned;
- The appropriate action and sustaining practices can be weighed against the cost of action;
- These reliability engineering principles also apply to an organization’s “people” assets and strategies.

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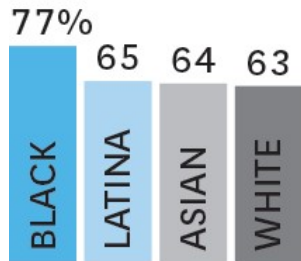
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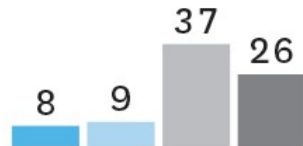
Source: NCES Digest of Education Statistics; Science & Engineering Indicators 2008

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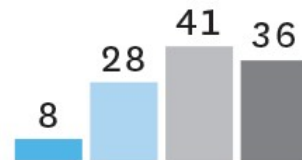
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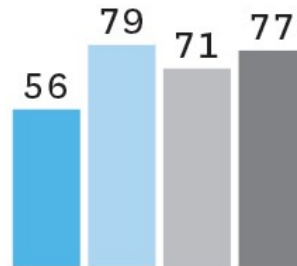
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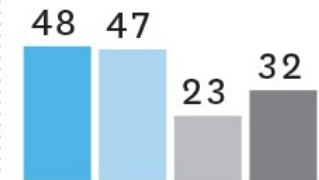
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## Client's Pipeline

- Mechanical Integrity Program
- Temporary Repairs
- Permanent Repairs
- Design Changes

## STEM Pipeline

- Inclusion Mindset
- Culture Stewardship
- Bias Interrupters & Small Victories
- Big Reforms

On Using Bias Interrupters vs. Sweeping Cultural Changes  
<https://hbr.org/2014/10/hacking-techs-diversity-problem>

Do Women Avoid Salary Negotiations?  
<https://www.nber.org/digest/apr13/w18511.html>

- North America Technical Team Changed Rapidly in Number and Demographics almost overnight
  - Based in Austin, some remote workers
  - In 2017 suddenly 1.8x larger, 18% female
- Technical Team Changes Since My Hire-In
  - Team Make-Up – 35% female
  - Austin – 60% female
  - Houston – 29% female team

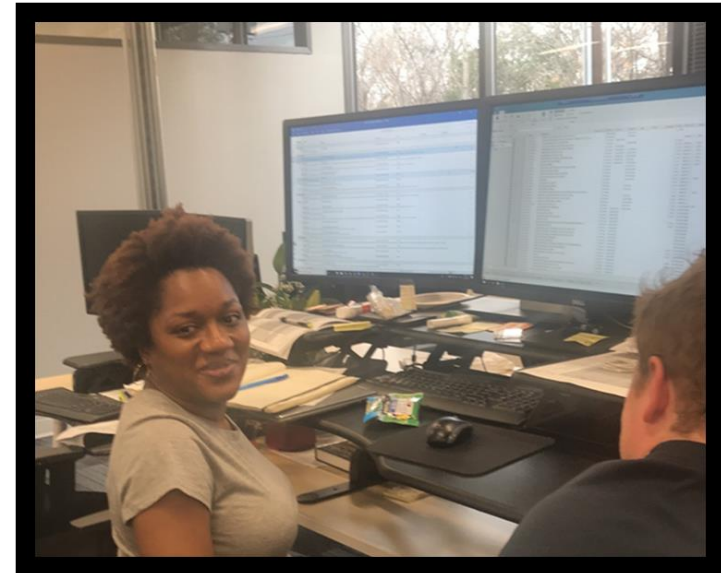


- Initial introduction to the culture
  - “This is who we are; live it and challenge others to live up to it.”
- Weekly call-back to values in meetings
- Daily reminder on our desktops
- Value-sharing culture, positive and negative
- Flex behaviors modeled by leadership and exercised, both male and female
  - Bringing children into work when needed
  - Work Flex hours or remotely

- I shared with my immediate boss very early because of a safety concern at a client site.
  - I let him know how I planned to proceed on-site.
  - He supported and offered to be a buffer against any push-back.
  - He gave me the space to decide when to share it with the team and leadership.

- The home office leave policy is driven by Australia's government
- My leave was the first in NA Services Team
- Our HR/insurance offering was unpaid leave and returning role through FMLA
  - *If* employee has one year of employment.
  - After leave was processed after an 8-week-early delivery, I received auto-notice of cancellation of benefits because I did not have a year.
  - The Leadership Team had my back. I kept benefits, and so did the little one during her month-long NICU stay.

- Designated pumping room was set up so that I could dock my computer and keep working as I pumped.
- The last person who required a room had the benefit of a closed office set-up.



- My job requires travel.
  - Travel was held off for the first 6 months back from maternity leave per my leader's advocacy.
- When I agreed to travel again
  - Number of days were limited
  - We agreed that the company paid if I needed to ship breastmilk.
  - This need was stated up front during "return to travel" talks.



- Uniform shirts for women versus continuing to treat the Men's polos as unisex!
- Revamping External Training
  - Updates to our external training based on feedback from attendees about “outdated” examples used
- Intentionality with our culture vs. “present it and hope for the best” approach
- Encouragement to engage with other women in Tech/Reliability Engineering;
- Participation of male leadership in those efforts.





- The COO and Finance Manager shopped HR Partner/Insurance Providers
  - New Fiscal Year saw new partner in place
  - Maternity Leave Benefit now offered through disability offering with new insurance provider
  - The larger percentage of the team

*The examples provided came as the result of requests made, perspectives offered, and leadership looking for ways to ensure inclusion...but statistics suggest Women Don't Ask!*

- Women Don't Ask: The High Cost of Avoiding Negotiation-and Positive Strategies for Change, by Linda Babcock and Sara Laschever, presents
  - How much women forfeit by avoiding negotiation;
  - The compounding effects throughout our careers;
  - The shared experience of not recognizing negotiation as an option;
  - How women self-disqualify on not having all criteria met versus male counterparts who promote with less

- Their follow-up, “Ask for It: How Women Can Use the Power of Negotiation to Get what They Really Want”
  - How to prepare yourself for negotiation in all of life;
  - Steps to move past the discomfort of “no”;
  - That the first “no”, where many women stop, is really the beginning of negotiation;
  - Exercises to build your negotiating muscles.

- Offer perspective.
  - There may not have been a reason to consider a different approach.
- Be honest about concerns, needs, red flags.
  - Allow your whole self to come to work.
- Make the request or state your need.
  - Do not assume ill-intent that the need was not anticipated.
  - Recognize the first request as the beginning and not the end.
- Celebrate the quick wins. Hold for the long-term.

- Great strides have been made in diversity; let's plug the leaks in the pipeline to improve retention.
- We drive change by stating our needs, offering our perspective, and partnering to plug the leaks with small changes and big reforms.
- Employers partner to steward culture without making it the sole responsibility of female employees to ask.
- Immediate adjustments and longer-term reforms result.

- Harvard Business Review
  - The 5 Biases Pushing Women Out Of Stem  
<https://hbr.org/2015/03/the-5-biases-pushing-women-out-of-stem>
  - Hacking Tech’s Diversity Problem  
<https://hbr.org/2014/10/hacking-techs-diversity-problem>
- Williams, Joan & Phillips, Katherine & Hall, Erika. (2014). Double Jeopardy? Gender Bias Against Women of Color in Science. 10.13140/2.1.1763.8723.
- Books by Linda Babcock and Sara Laschever
  - Women Don’t Ask: Negotiation and the Gender Divide
  - “Ask for It: How Women Can Use the Power of Negotiation to Get what They Really Want”
- Do Women Avoid Salary Negotiations? Evidence from a Large Scale Natural Field Experiment (NBER Working Paper No. 18511), co-authors Andreas Leibbrandt and John List  
<https://www.nber.org/digest/apr13/w18511.html>