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# Micromessaging , Access, and Equity in STEM

**National Alliance for Partnerships in Equity  
Education Foundation**

**Claudia Morrell, M.A., M.S.**



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# Welcoming Awareness

## Introduce yourself to the class

- Name
- Title
- Organization/unit





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# Objectives

- Learn about the National Alliance for Partnerships in Equity (NAPE)
- Understand why we still focus on girls and women in education
- Present a new model for educator engagement to transform the classroom called Micromessaging



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# Who is NAPE



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# Who is NAPE?

## National Alliance for Partnerships in Equity

### Professional Development: STEM Equity Pipeline

Provide tools and curricula for educators through conferences, presentations, webinars, and formal training

### Research and Evaluation

Develop reports.  
Identify research-based promising practices.  
Provide input to others' research.

### Technical Support

Develop tools and resources for EA's  
Provide consulting services.  
Offer expertise on access, equity, and diversity issues.

### Public Policy and Advocacy

Work with federal agencies.  
Educate legislators on equity and diversity issues.  
Develop policy briefs.  
Alert membership policy issues.



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## Professional Development for Educators: STEM (including CTE) Access, Equity, Diversity

### STEM Equity Pipeline™

#### PIPESTEM™ Project

Working with institutional leaders (administrators, dept heads, etc.) to improve enrollment, retention & completion of girls & under-represented populations in STEM courses

#### STEM Equity Teacher Training

Training teachers to use pedagogy that improves enrollment, retention & completion of girls & under-represented populations in STEM courses

#### STEM Equity Counselor Training

Coaching counselors to encourage girls and under-represented populations in STEM careers

#### Tools & Resources

Tools to support teachers' & counselors' learning and assist their students, e.g., camps, partner orgs, books

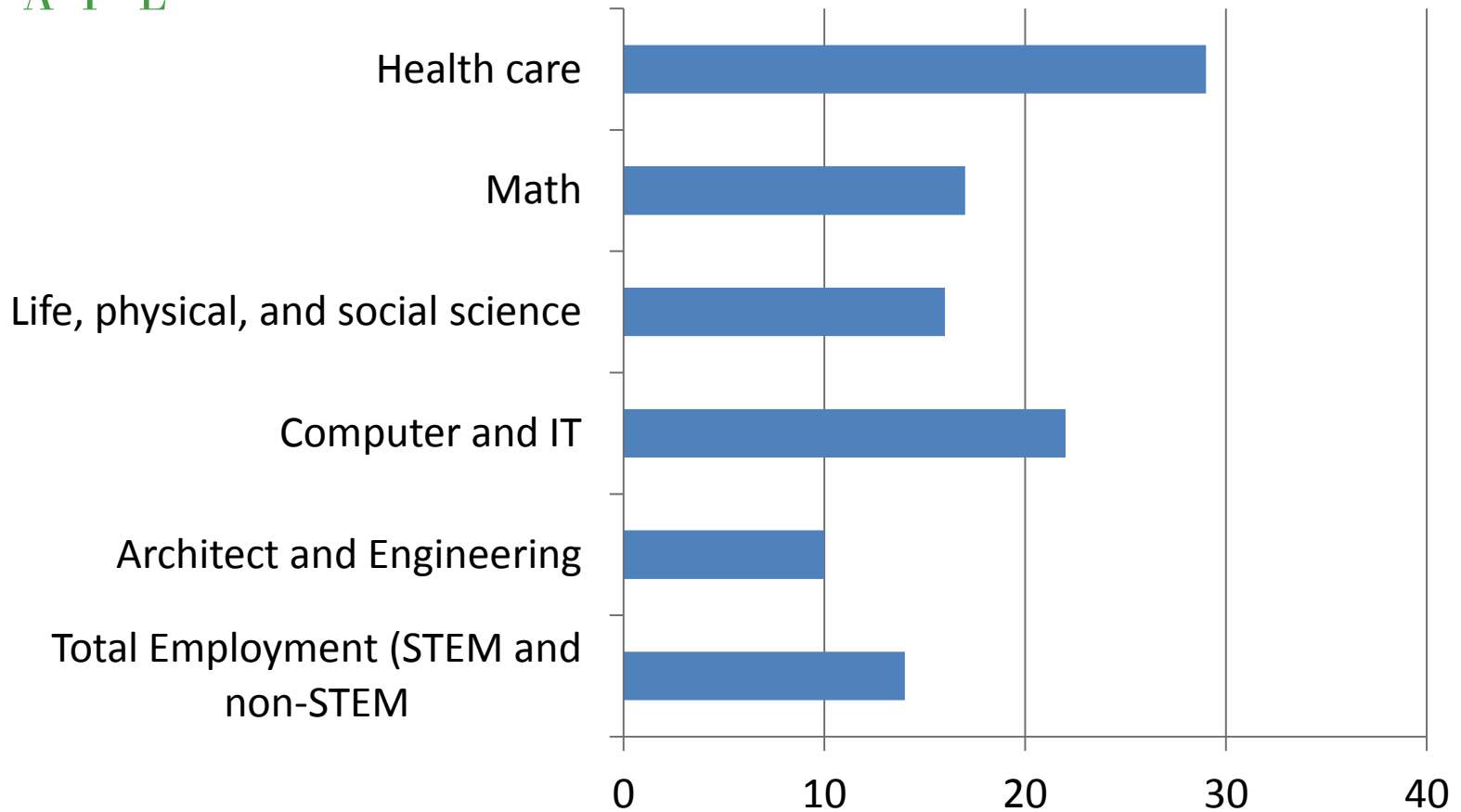


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# Why We still Care



## Projected Growth in Employment in Selected STEM Occupations, 2010-2020



Source: Bureau of Labor Statistics. Chart 5. *Occupational Outlook Handbook, 2011-12 Edition.*

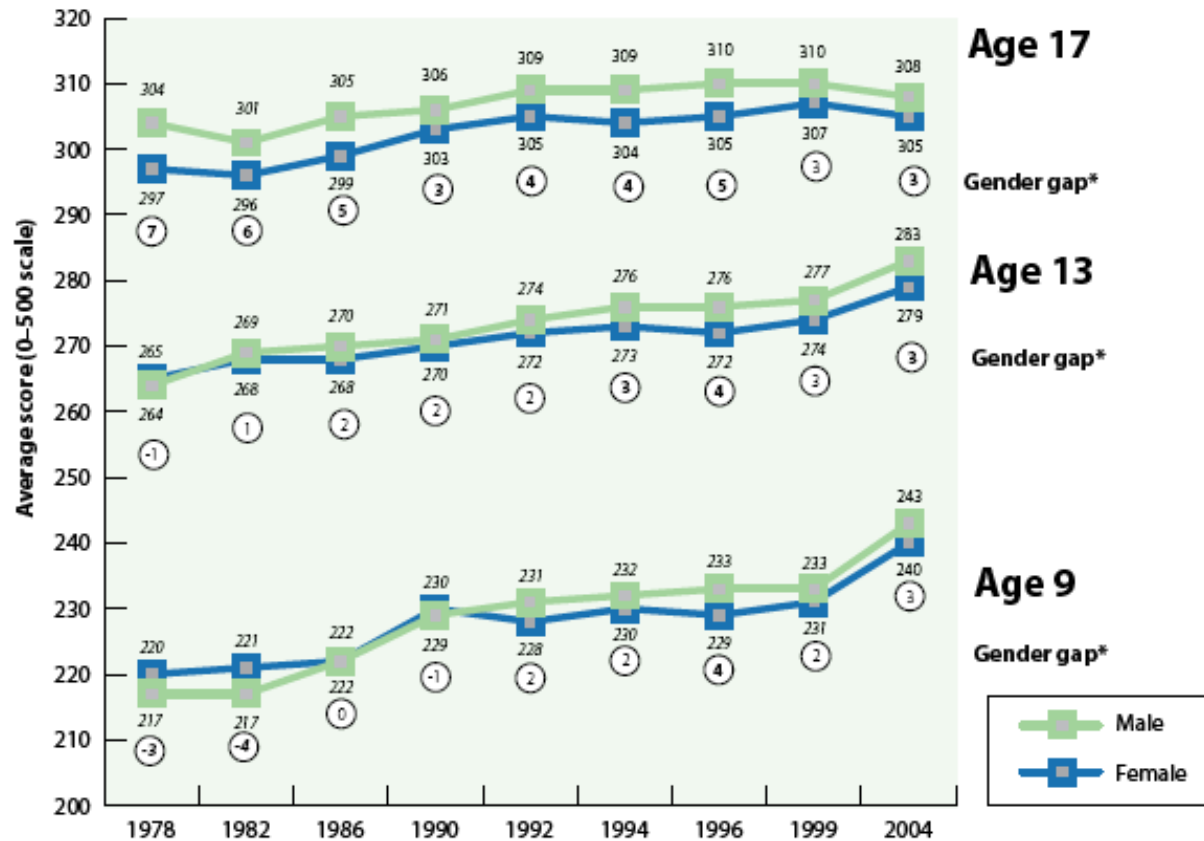
NAPEEF ©





# STEM Performance- Core Academic-Longitudinal Data

**FIGURE 2. NAEP-LTT MATHEMATICS ASSESSMENT AVERAGE SCORES, BY GENDER, 1978-2004**





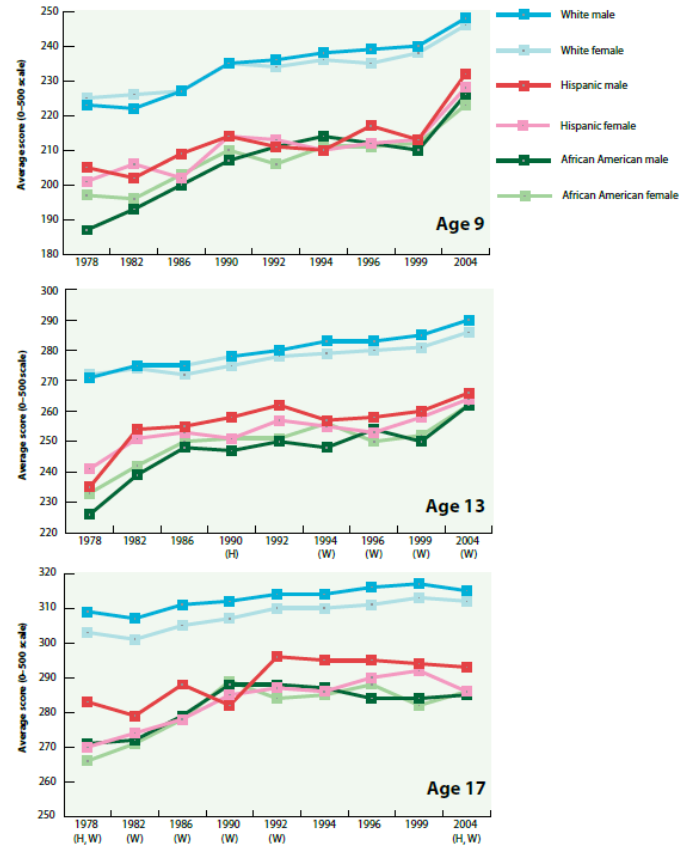
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# STEM Performance Gaps—Race

- White males and females outperform Hispanic and African Americans on the National Assessment of Educational Progress – Mathematics Assessment

Race

FIGURE 4. NAEP-LTT MATHEMATICS ASSESSMENT AVERAGE SCORES, BY GENDER AND RACE/ETHNICITY, 1978-2004



Note: A, H, and W indicate years in which there was a significant gender difference in scores among African American (A), Hispanic (H), or white (W) students.

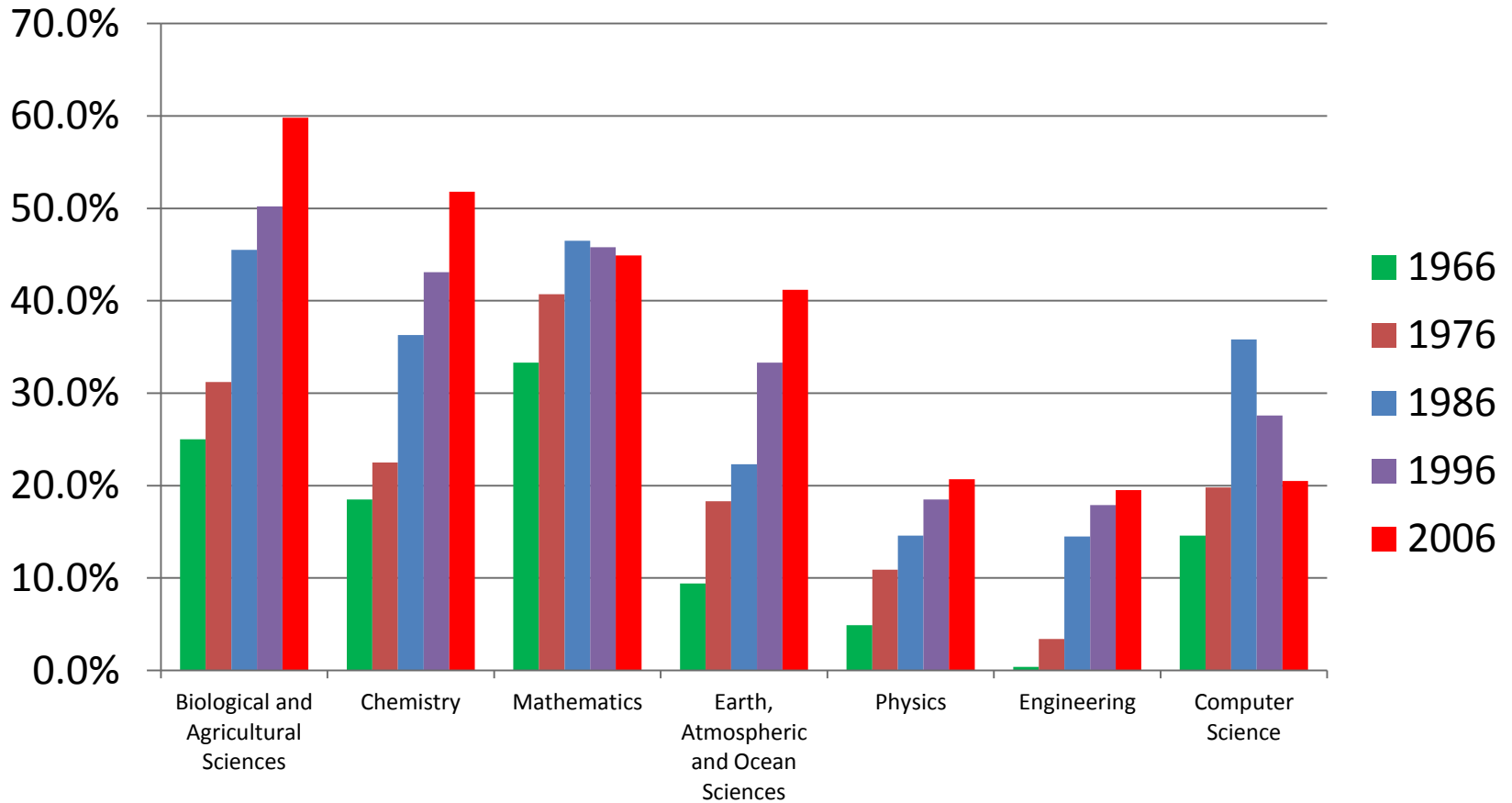
Source: U.S. Department of Education, National Center for Education Statistics, NAEP Data Explorer, Washington, DC, Author.



# Women's Representation among STEM Bachelor's Degree Holders has Improved over Time but Varies by Field

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Bachelor's Degrees Earned by Women in Selected Fields, 1966–2006



Source: National Science Foundation, Division of Science Resources Statistics, 2008, *Science and engineering degrees: 1966–2006* (Detailed Statistical Tables) (NSF 08-321) (Arlington, VA), Table 11, Author's analysis of Tables 34, 35, 38, & 39.

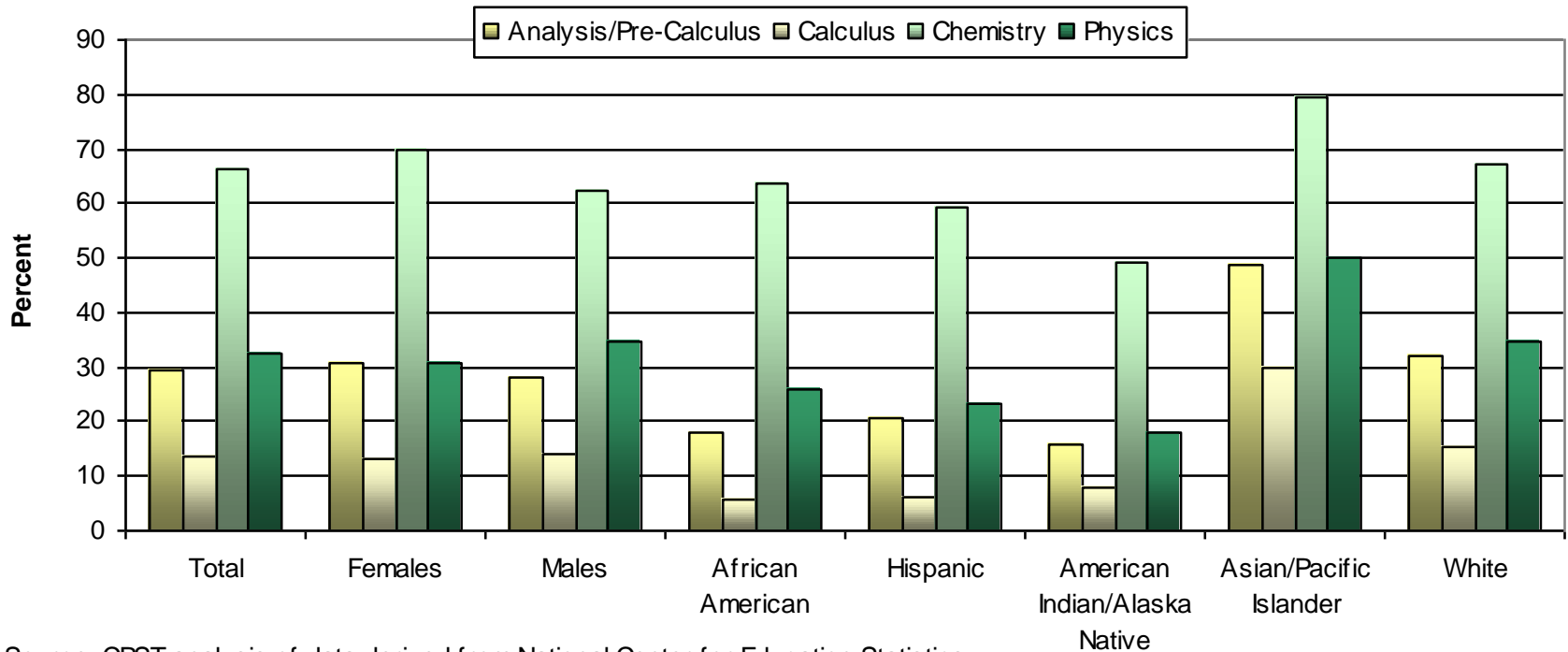
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# Racialized Participation Gaps in High Schools Across STEM Courses

Figure 1-7. High School Graduates' Science and Mathematics Course Taking, Selected Courses, 2005 by Gender and Race/Ethnicity

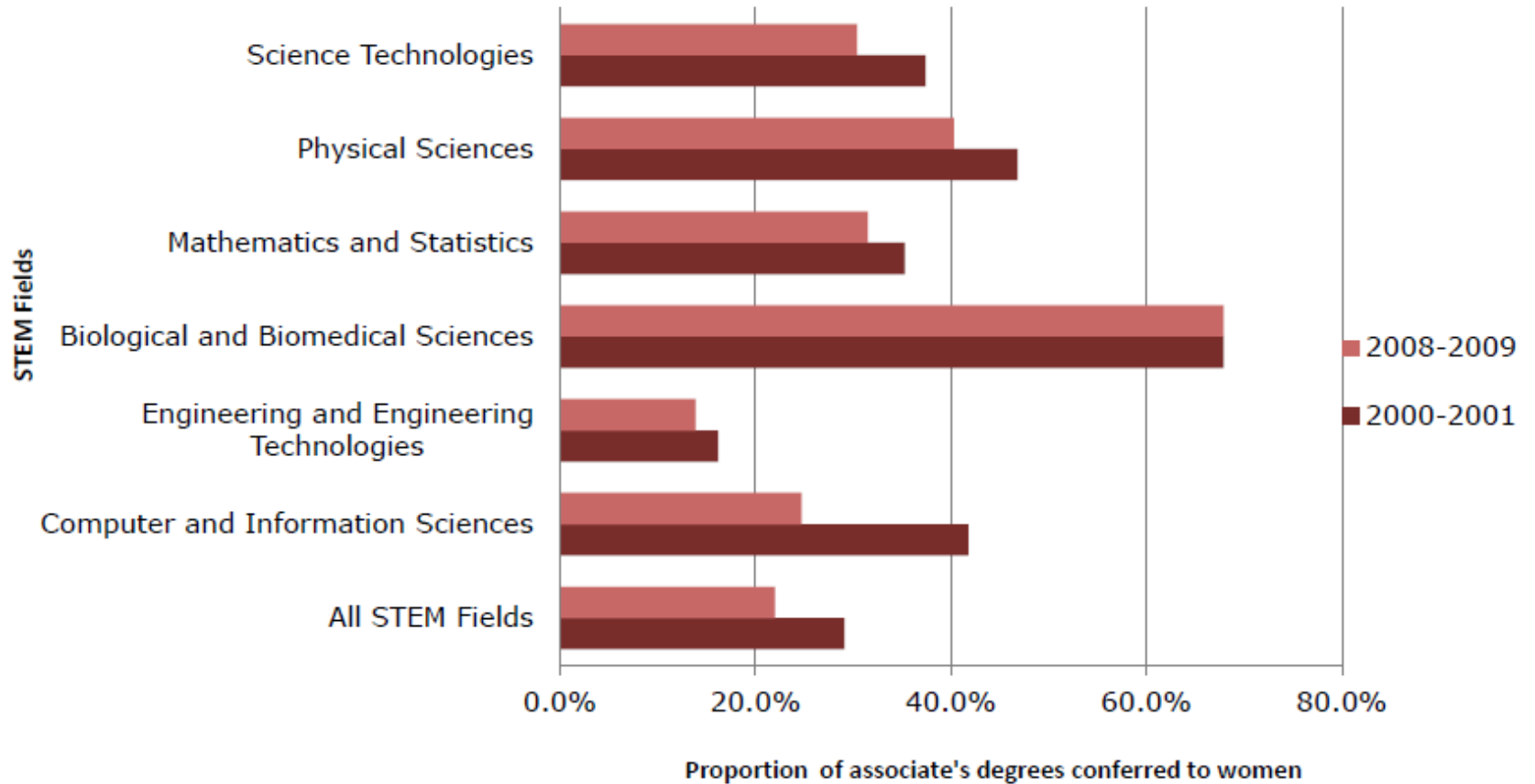


Source: CPST analysis of data derived from National Center for Education Statistics  
*Digest of Education Statistics, 2007.*

CPST

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**Figure 2. Percentage of Associate's Degrees Awarded to Women by STEM Field, 2000-2001 and 2008-09**



Source: U.S. Department of Education. National Center for Education Statistics. Postsecondary Awards

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# Building a New Paradigm



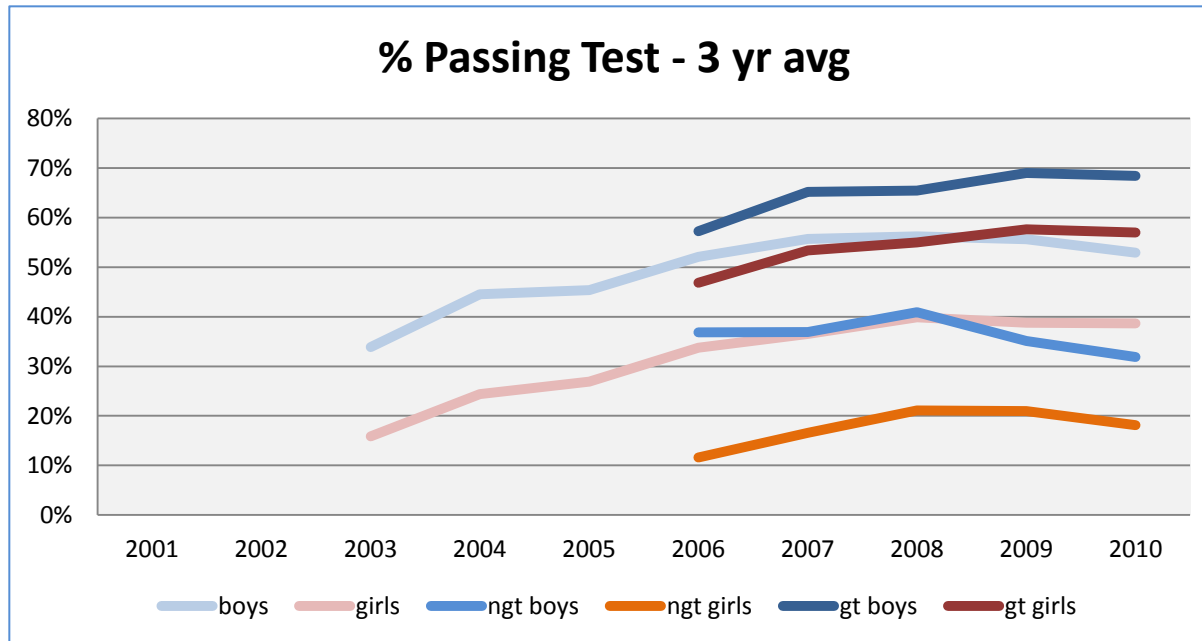
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## Rethinking an old paradigm

1. Find an effective pilot program
2. Adapt an recognized model for continuous improvement
3. Develop a new understanding of culture delivery (The missing link in culture change)



# Effective Pilot Program DFW Gender Equity Training



Both boys and girls of the teachers that had Gender Equity training are passing at 20-30% points higher than students of teachers without the training



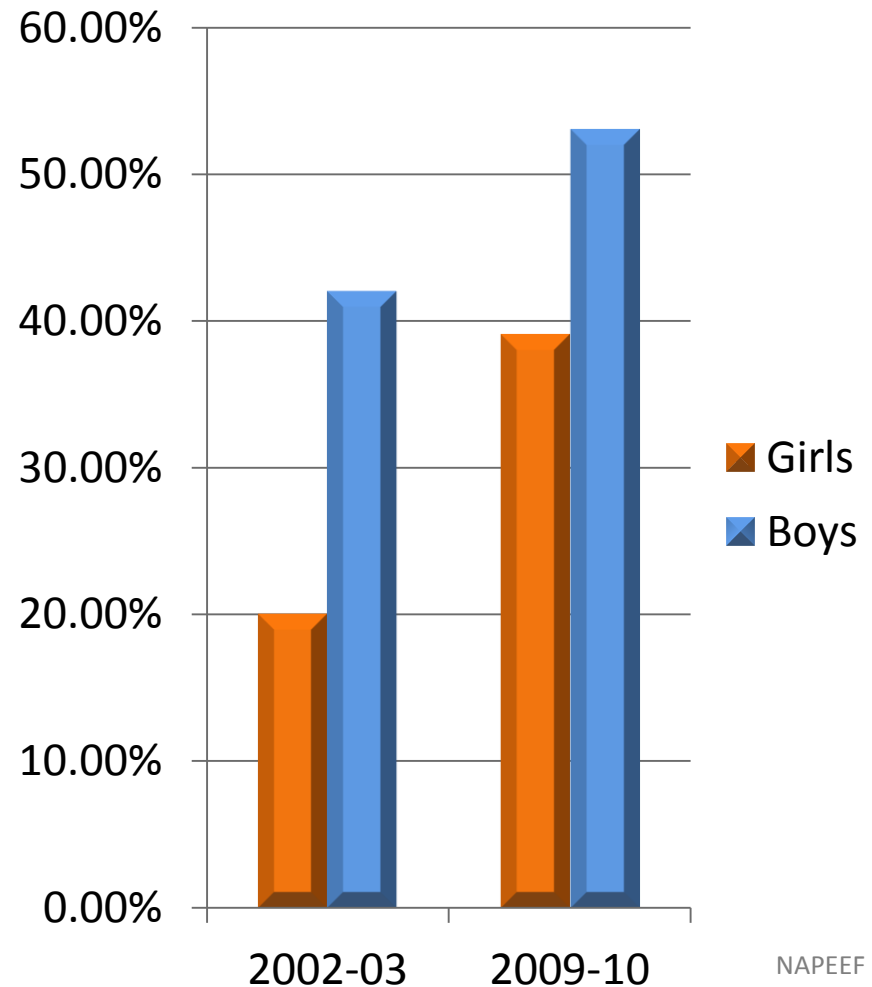


# DFW: Professional Development

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Since implementation in 2003,  
AP Physics test pass rates  
improved for both girls and boys:

- 4x tests passed by girls
- 4x tests by African Americans
- 6x tests passed by Hispanics

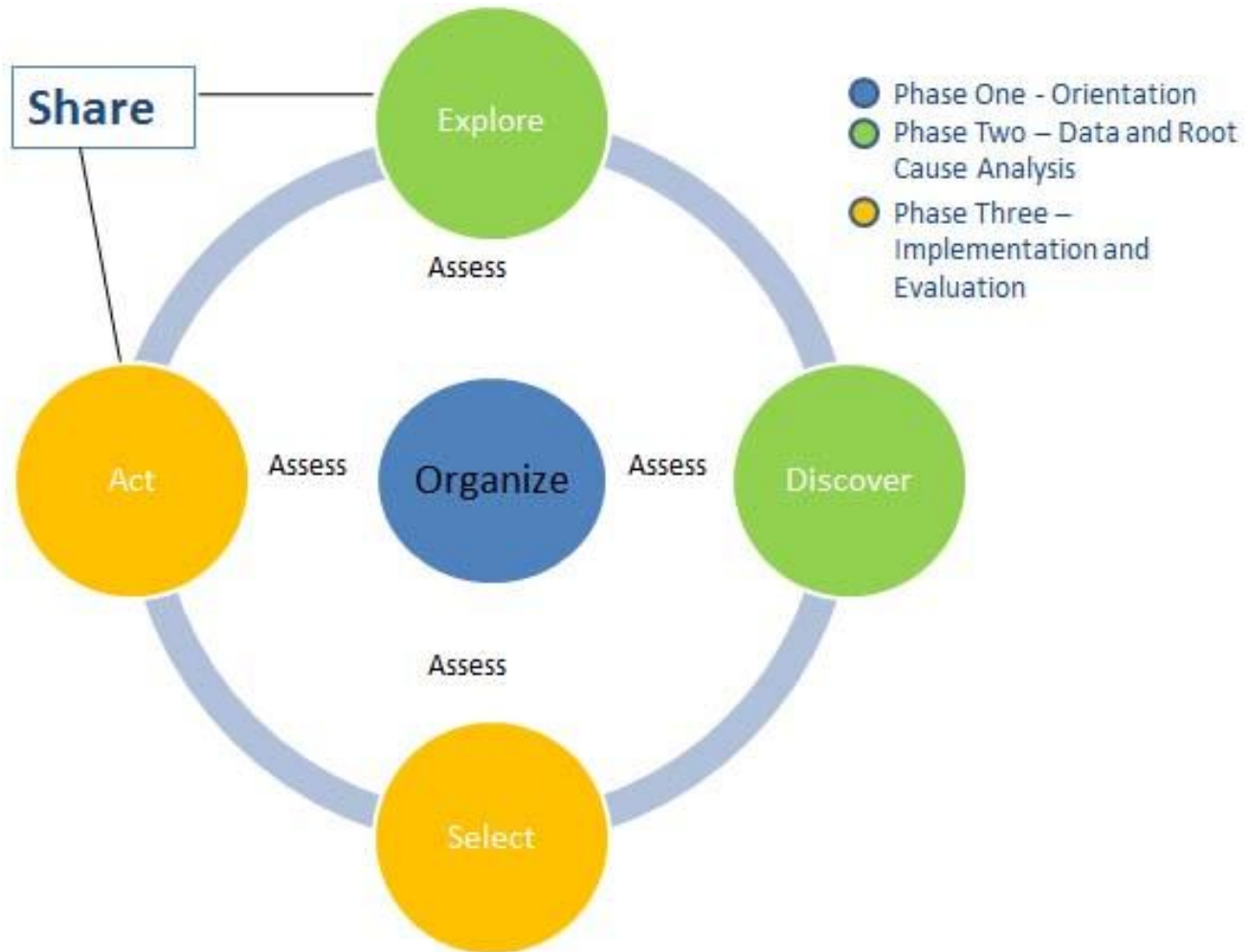


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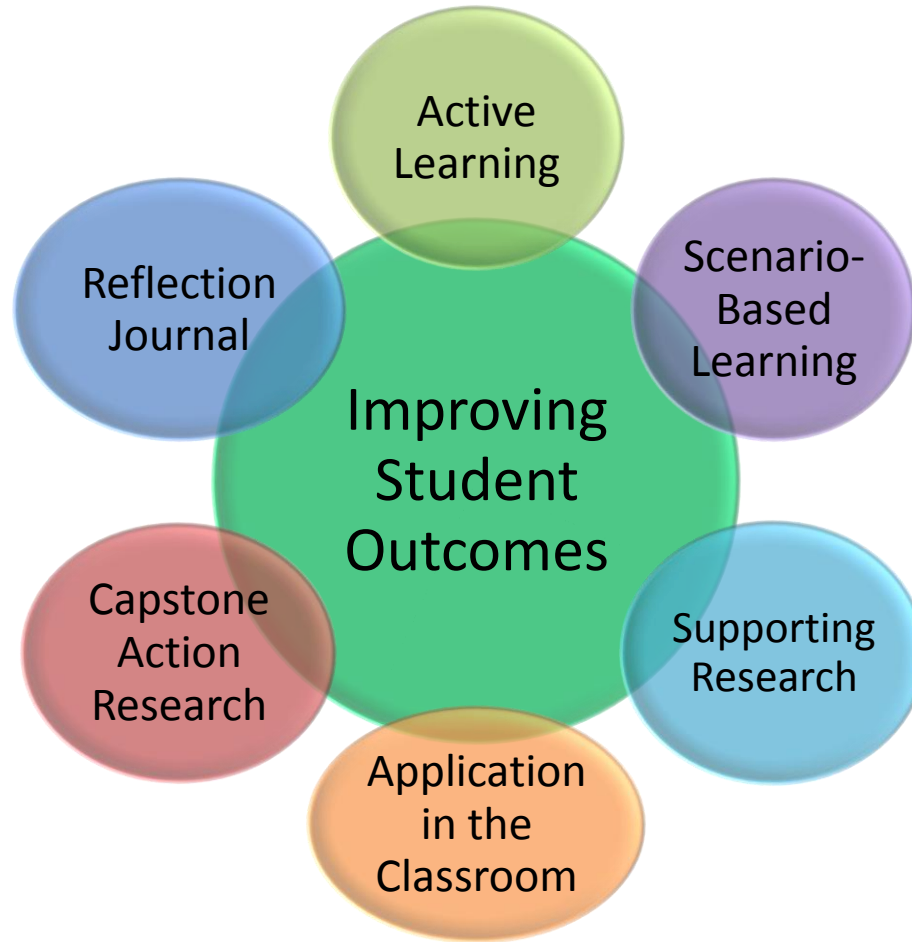
# Adapt a Recognized Model: The Educator as Classroom Scientist: PIPESTEM™





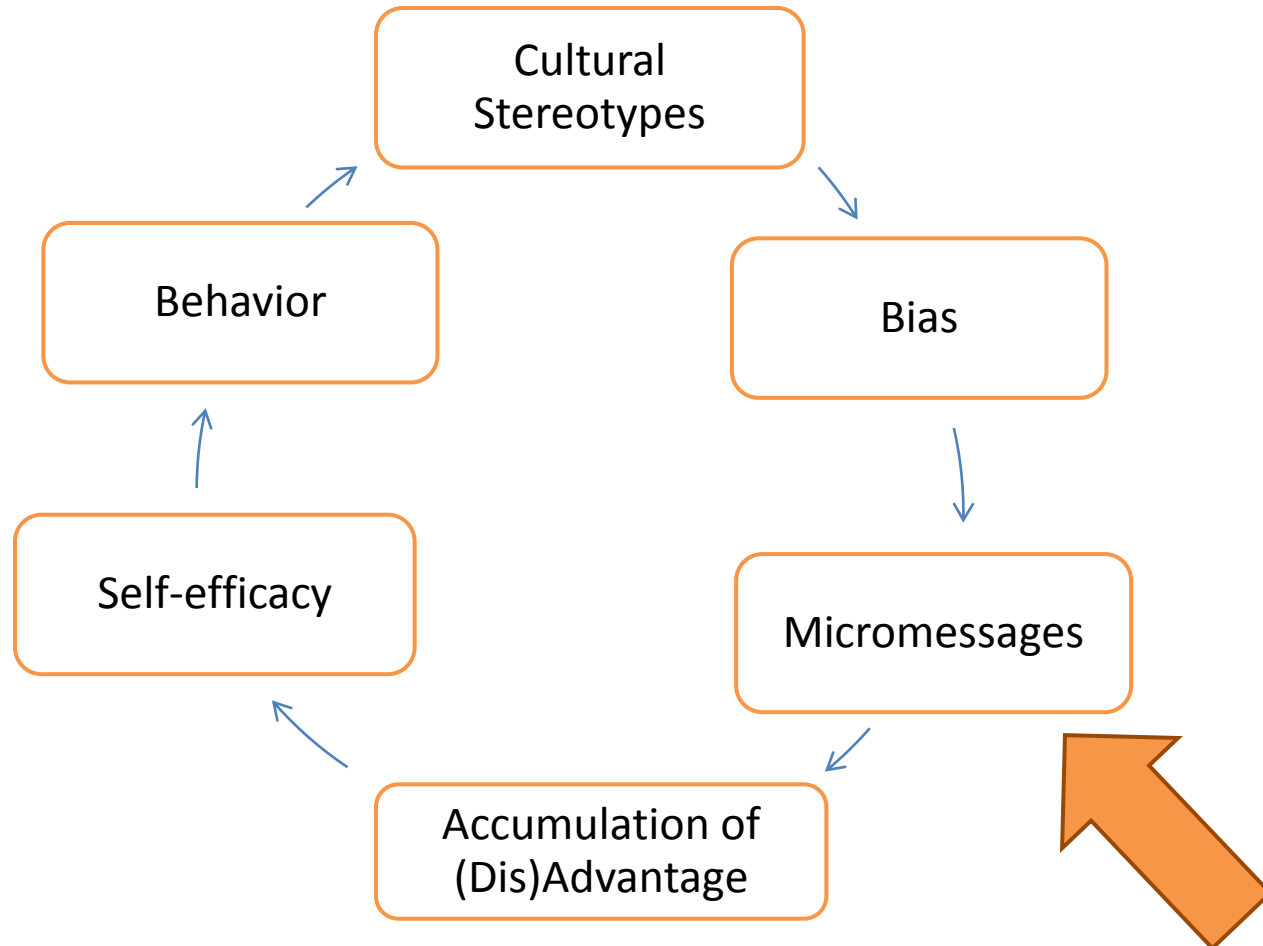
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# Making It Happen





# Micromessages: The Missing Link in Culture Delivery





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# Micromessaging

## Micromessages

- Small, subtle, semi-conscious messages we send and receive when we interact with others

## Micro-inequities

- Negative micro-messages we send other people that cause them to feel devalued, slighted, discouraged or excluded

## Micro-affirmations

- Positive micro-messages that cause people to feel valued, included, or encouraged





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# Lands End Catalog 2012

## super light, superhero tough

**FeatherLights™** reduce their school load by trimming weight off the pack. But what makes them really amazing is they do it without sacrificing durability, thanks to strategically placed 420D and 600D pack cloth.

**Lighter weight. Same awesome durability.**

**Guaranteed. Period.®**

**make it your own!**  
with a monogram,  
embroidery or both!  
details, p. 76



3. rich red  
(webbing: bright lime)

clip-on  
flashlight, p. 77





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# Lands End Catalog 2012

light as a feather,  
tough as long division

**FeatherLights™** reduce their school load by trimming weight off the pack. But what makes them really amazing is they do it without sacrificing durability thanks to strategically placed 420D and 600D pack cloth.

**Lighter weight. Same awesome durability.**

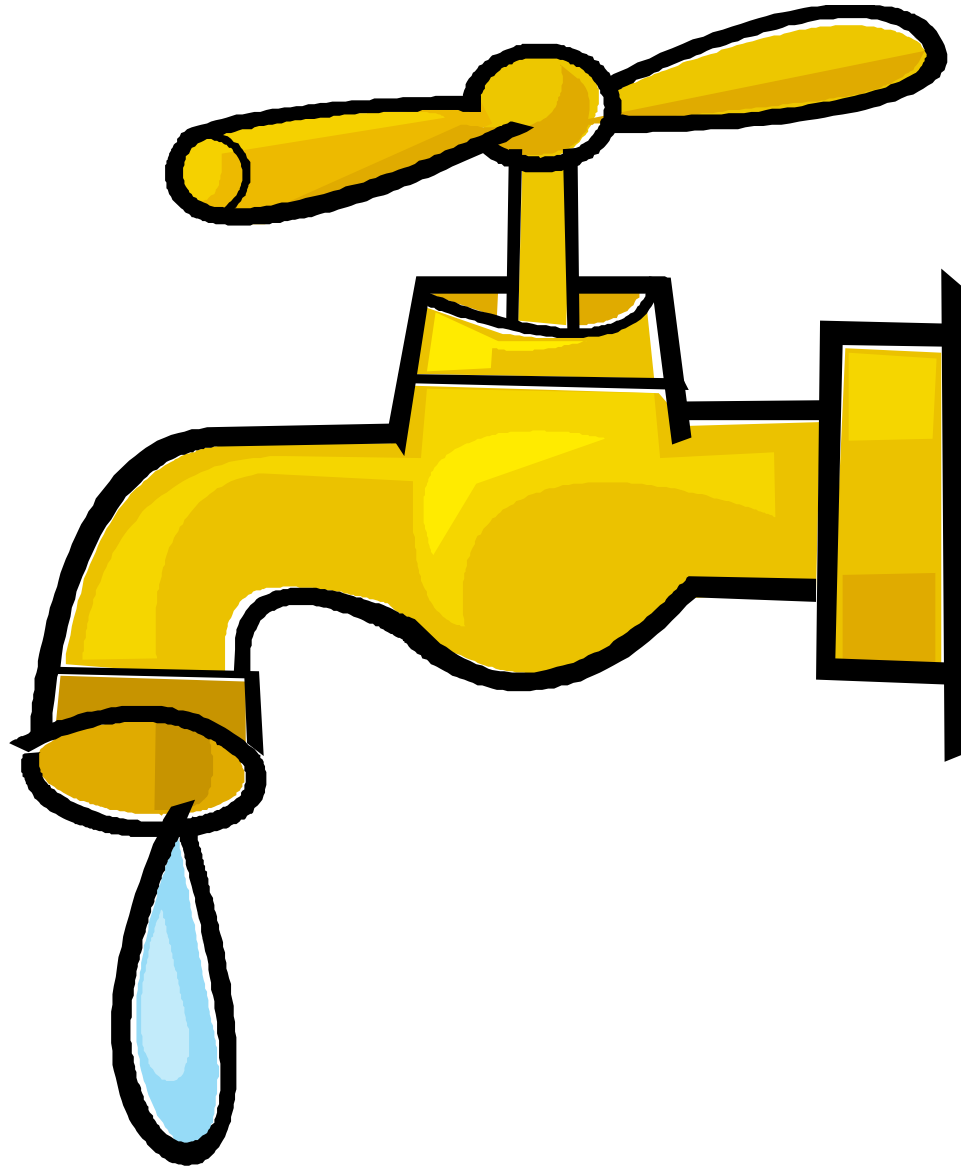
**Guaranteed. Period.®**

e-reader case, \$15, 419654-B43,  
water bottle, \$19, 422617-B44,  
landsend.com





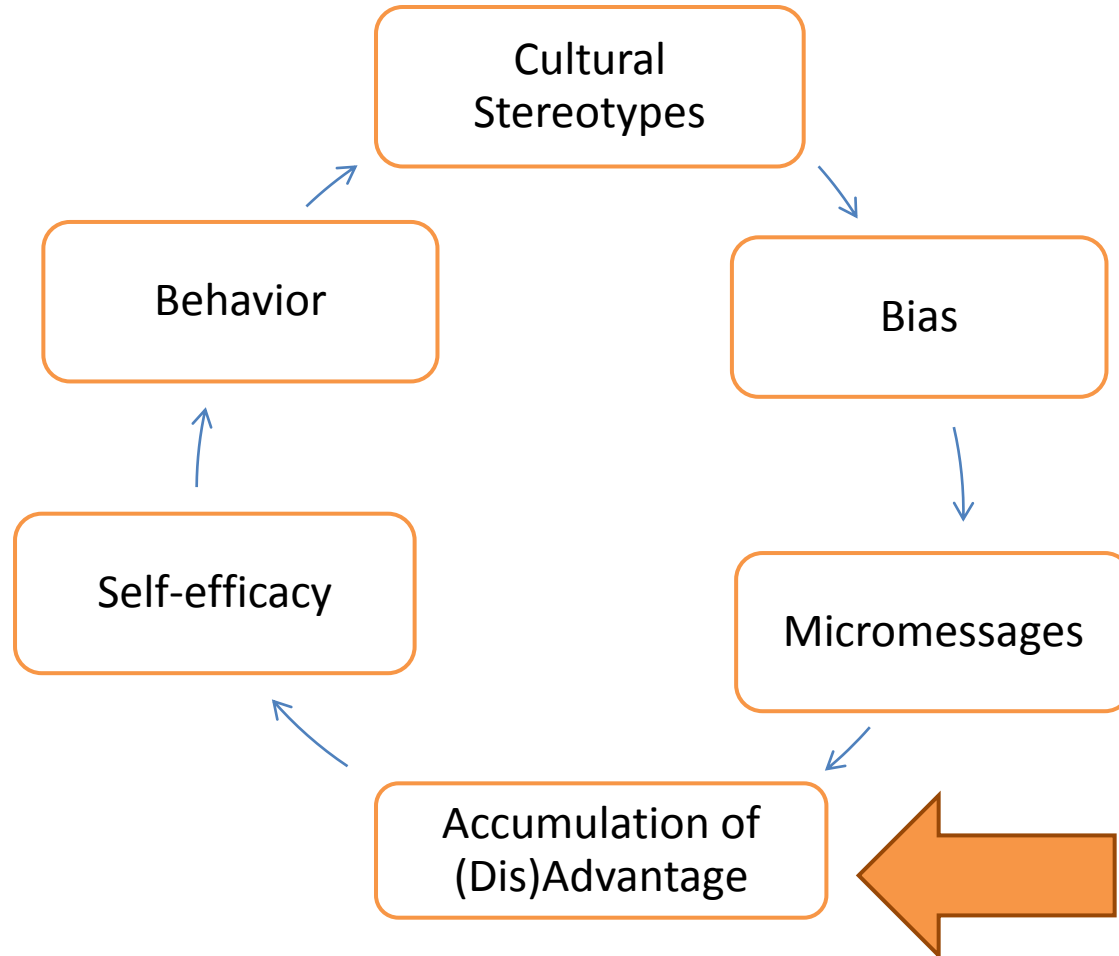
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# Micromessages: The Missing Link Between Bias and Behavior





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# Exercise



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# Gender Bias = Micro-Inequities

Unconscious

Subtle

Unintentional

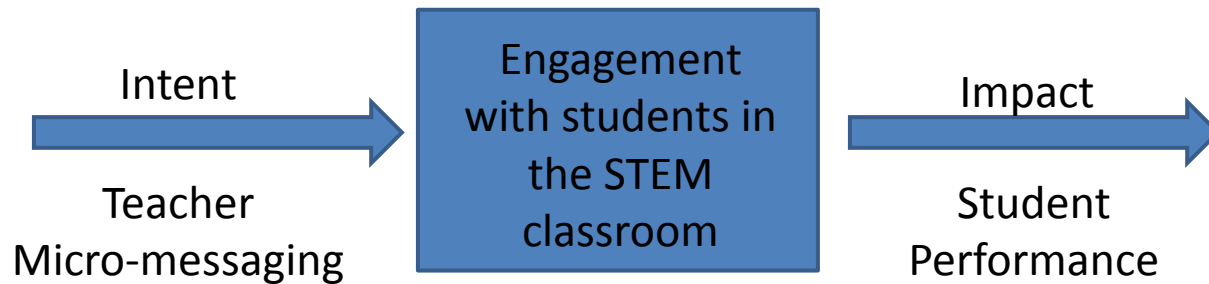
PERVASIVE

POWERFUL



# Why Think About Micromessaging?

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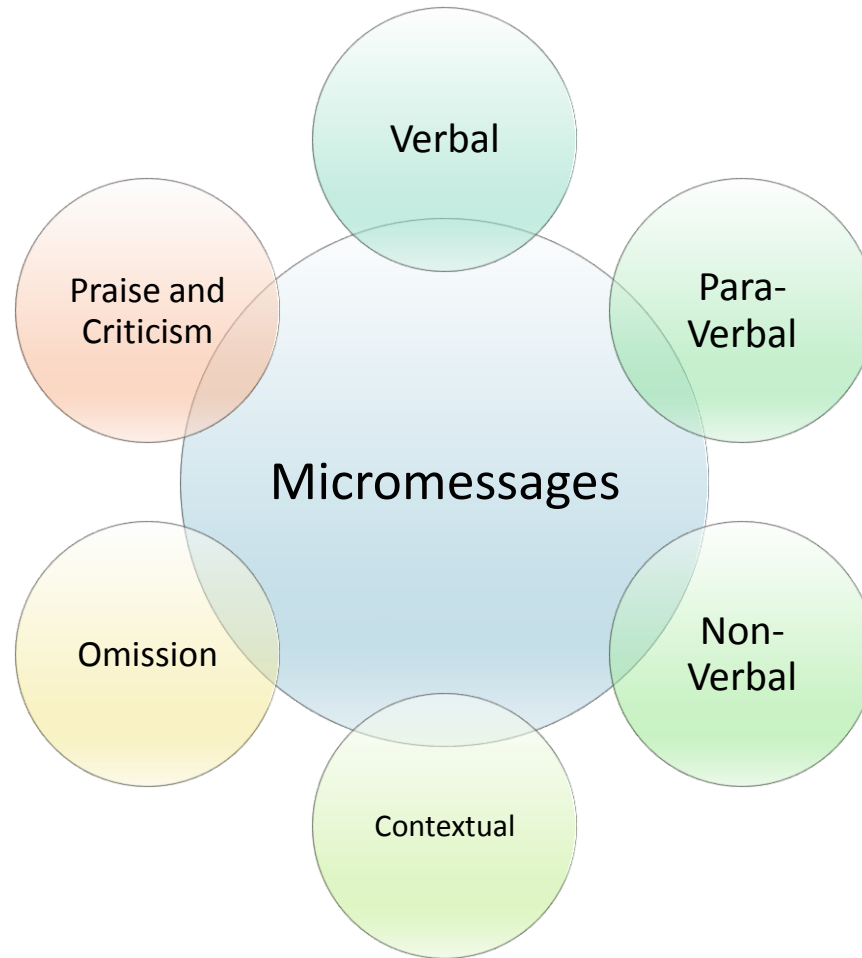
Small and seemingly insignificant behaviors may result in unfavorable learning outcomes.

**Impact is More Important Than Intent!**



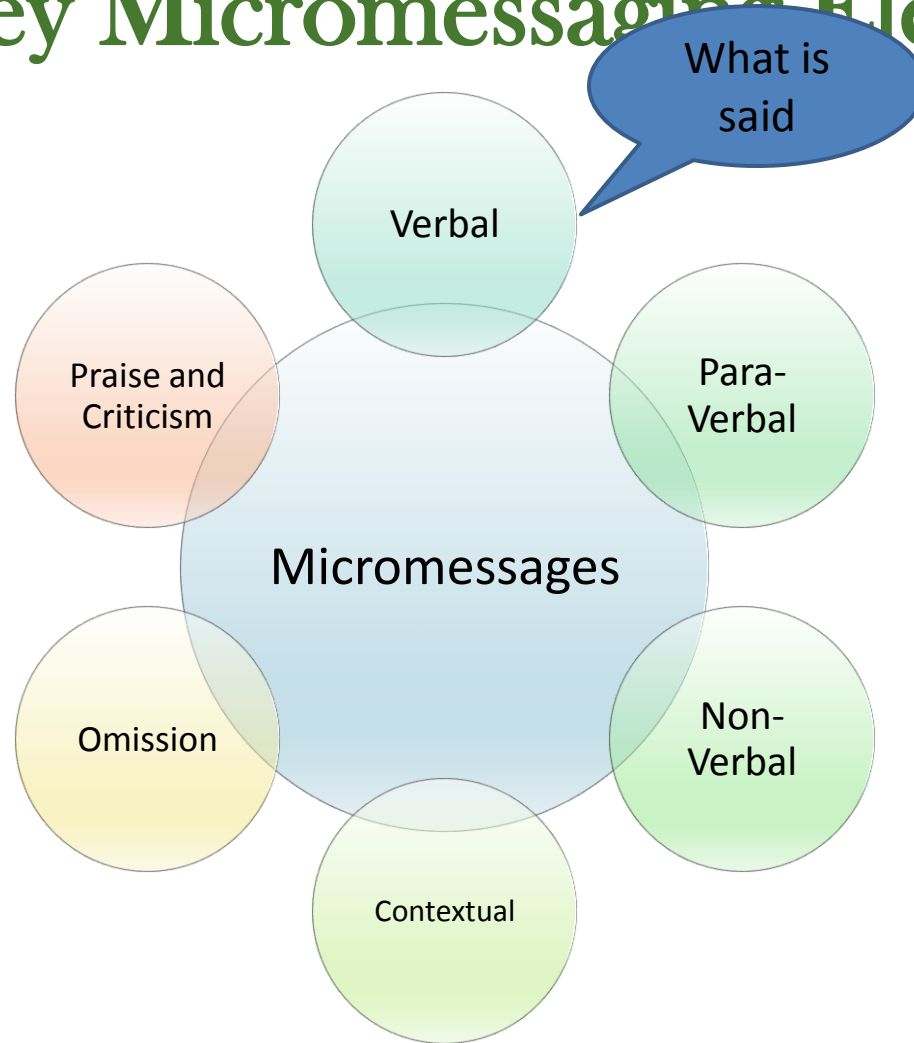
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# Key Micromessaging Elements



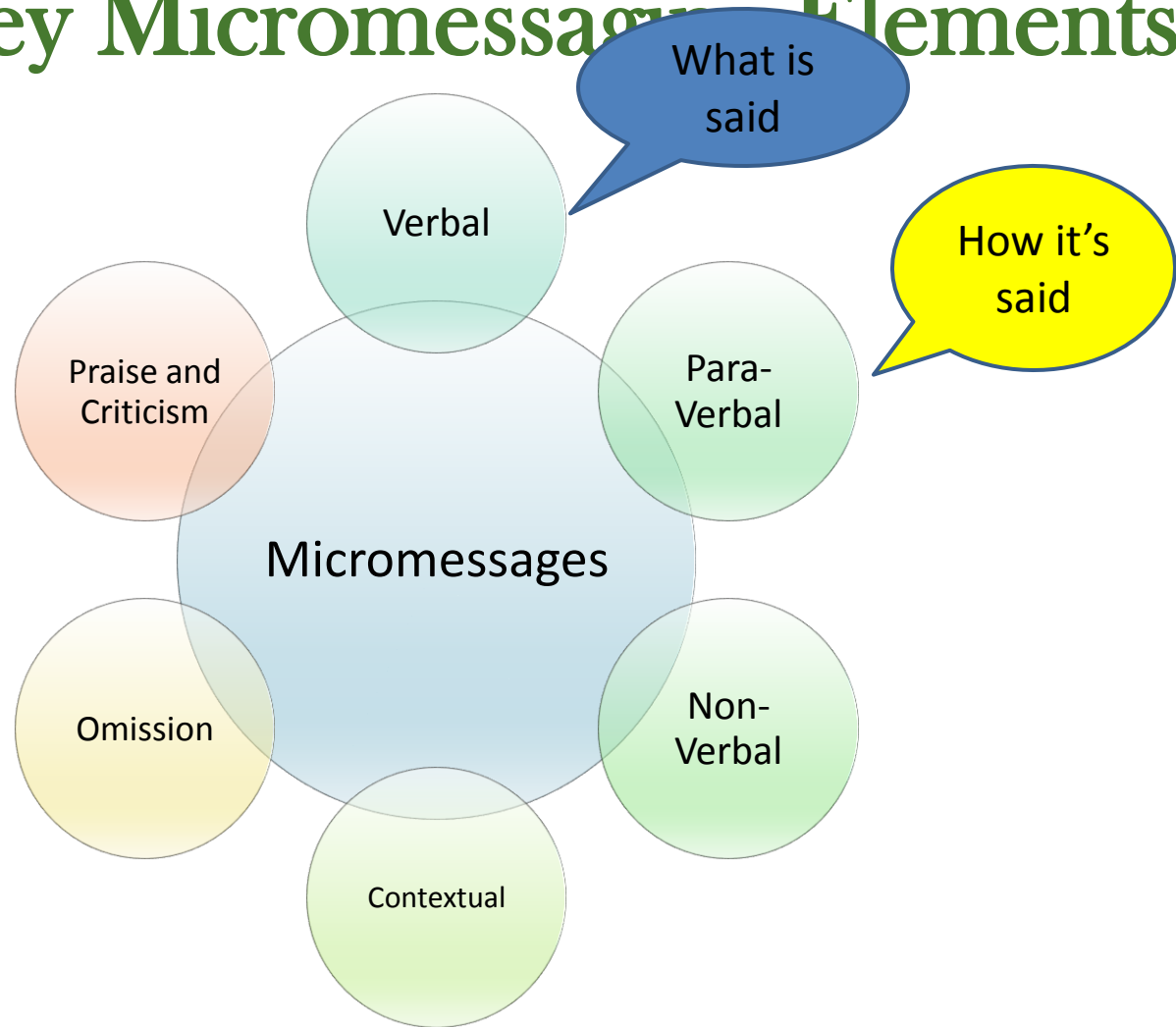


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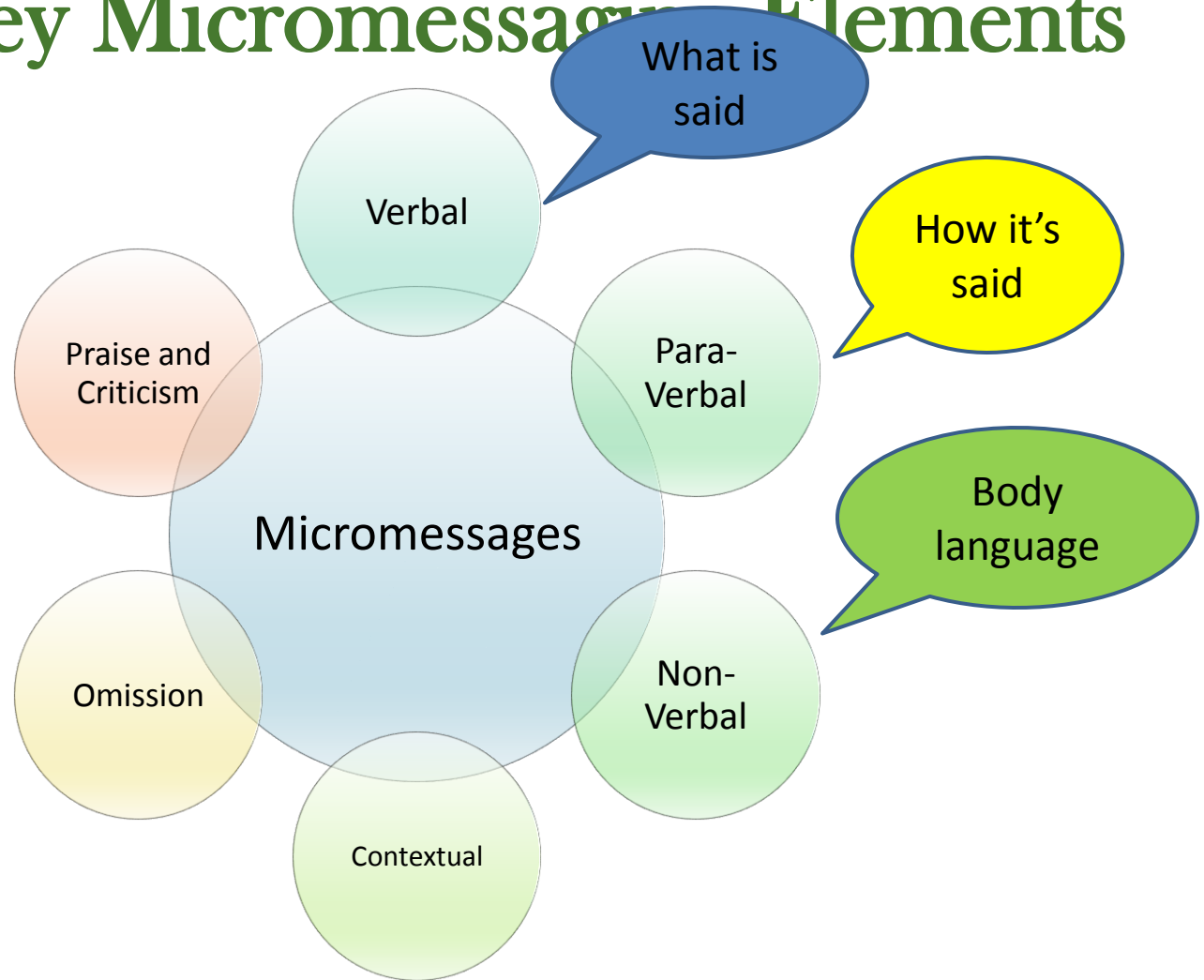




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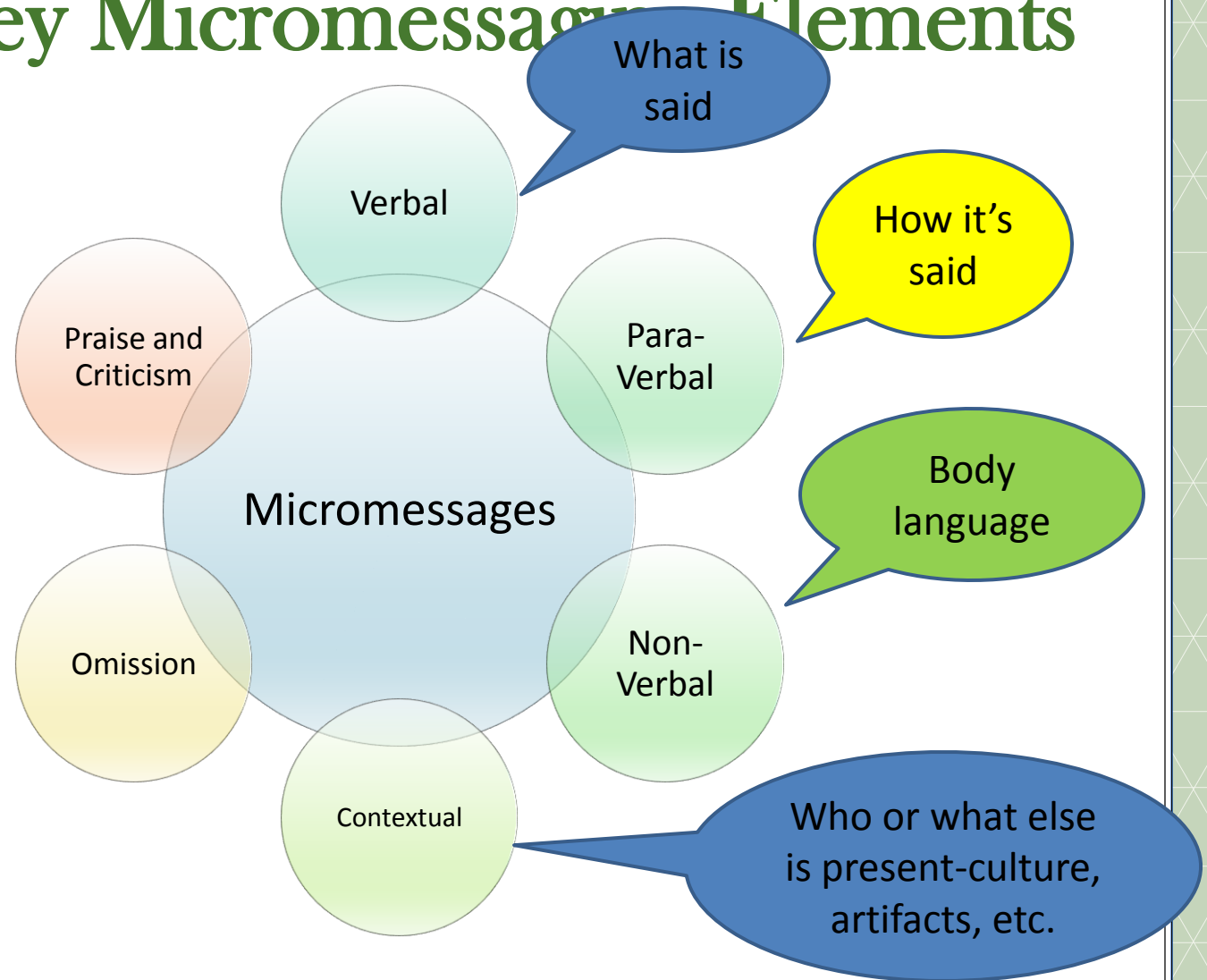






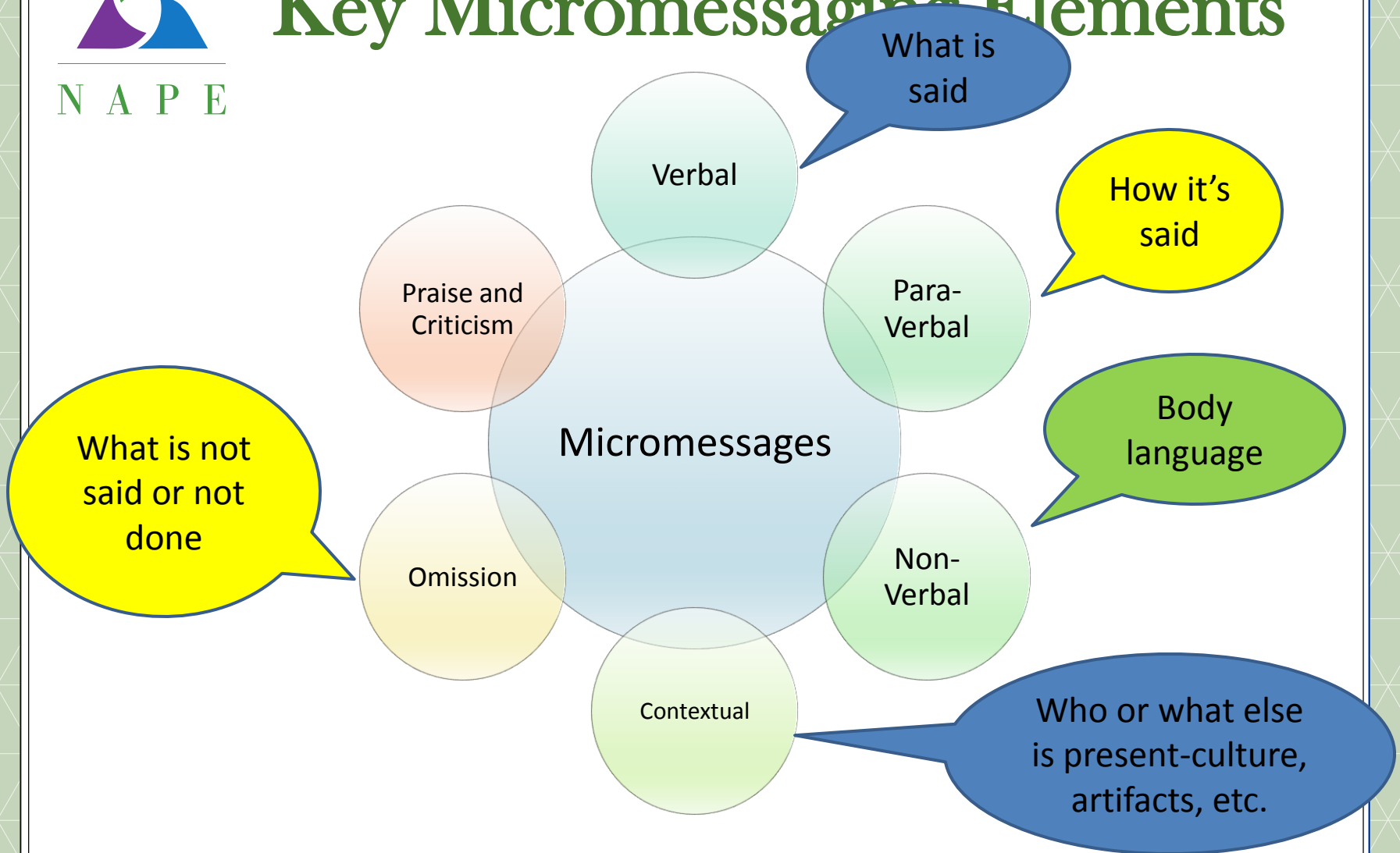
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# Key Micromessaging Elements



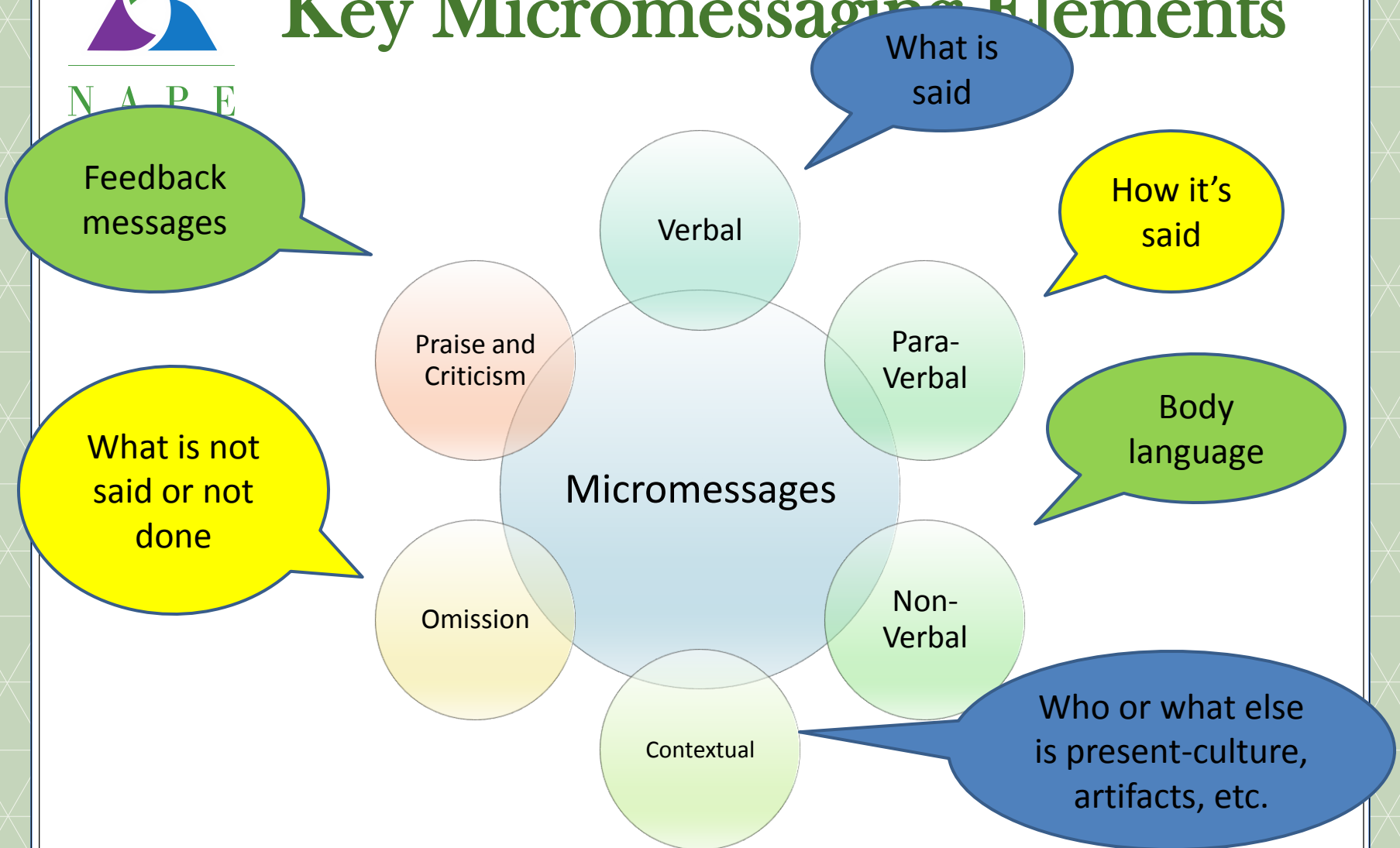


# Key Micromessaging Elements





# Key Micromessaging Elements





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# Activity: Guess the Element

Cue	Type
Wait longer for boys' answers than those of girls	
Discipline boys more than girls for similar behavior	
Avoid eye contact with female/male student; only look at male/female students	
Consistent use of generic "he" or "man" to represent both men and women	
Only use males as examples of scientists	
Do not tolerate girls calling out answers but tolerates that behavior from boys	



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# Examining the Small

On a piece of paper write a specific incident when you were being...

- unintentionally discouraged or hurt by something **SMALL** someone said or did
- deeply valued by your colleague or family member in a **SMALL** yet powerful way.

*- How did you know? What did that person do to communicate your value?*



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# Positive Micromessages

Micro-affirmations are micromessages we send that validate and recognize other people in positive and supportive ways.



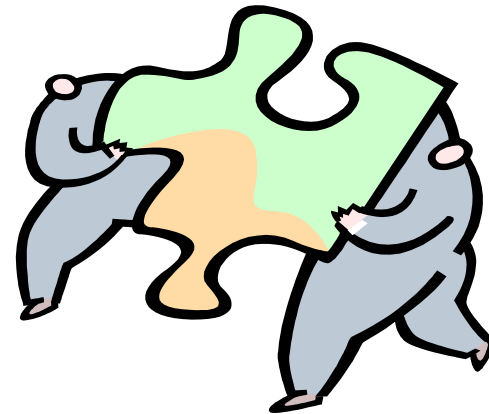


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# Inoculate and Be Affirmative!

Make a concerted over-effort to become affirmative:

- It takes time (a year or more!)
- It takes effort (a conscious plan)
- It takes support (peers and a learning community)





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# Exercise





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# Impact of Micro-Affirmations on Women in STEM

- Enhanced creativity and innovation and willingness to take risks
- Increased engagement in complex tasks and open-ended thinking
- Improved caring about learning
- Increased interest in STEM and development of girls' STEM-identity





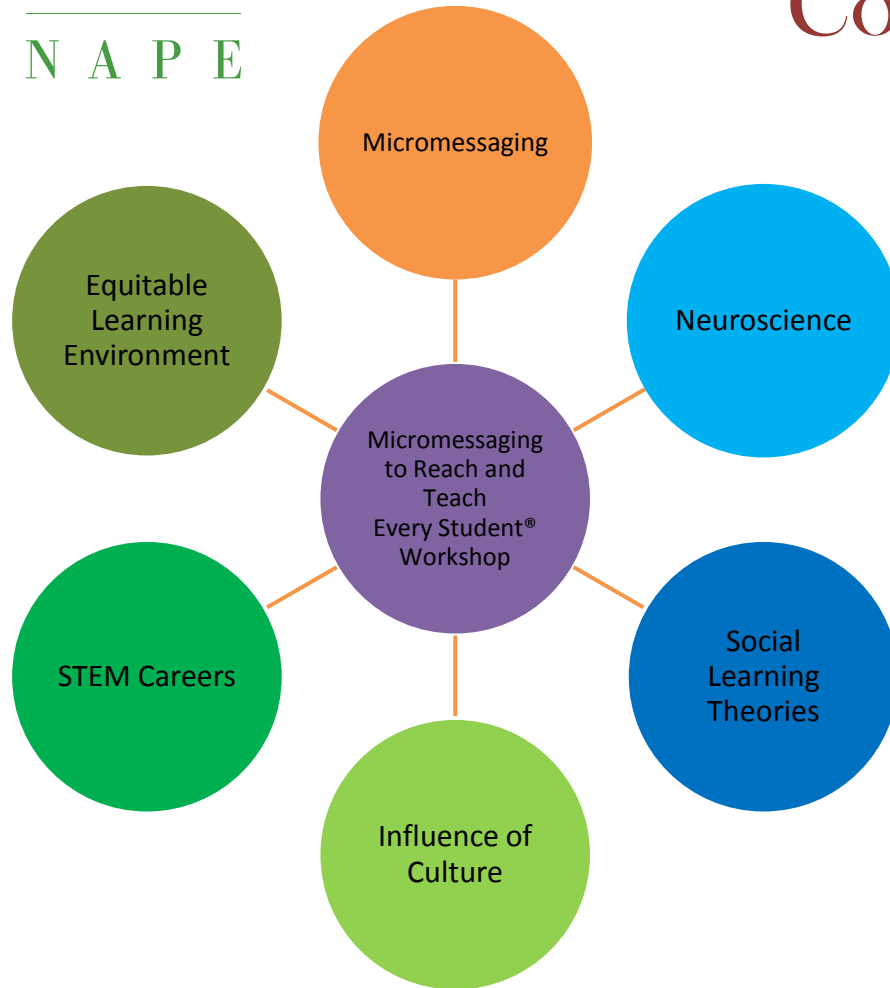
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## Teachers want strategies that:

- Are based on solid data collection and analysis
- Lead to an equitable classroom environment
- Consider and integrate research-based social and cultural issues
- Counteract micro-inequities by building micro-affirmations
- Be based on observations, reflection, and data



# Creating Simplicity out of Complexity



**Micromessaging:** Increase awareness of implicit bias and micromessaging that impact access and equity for students in their classrooms.



# Super Strategies



- Practice positive affirmations
- Work with peers to identify unintended biases to improve your instruction
- Help the student identify someone in their life who recognizes the student's potential, connects the student's strengths to characteristics of a profession, and teaches them how to enter that field.
- Intervene in students' conflicts and teach them to use inoculations and affirmations when communicating.
- Be diverse in the examples used in the classroom to illustrate concepts and ideas.



# Pedagogy Points

A diversity of learners will benefit from the diversity of strategies for conveying information in the classroom. For instance, consider how you might deliver a lesson using the following:

- Direct instruction
- Inquiry training
- Non-directive (facilitative) teaching and self-esteem building
- Synectics or creative thought whereby students “break boundaries” in problem solving and writing
- Collaborative learning
- Group investigation
- Role playing





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# Objectives

- Learn about the National Alliance for Partnerships in Equity (NAPE)
- Understand why we still focus on girls and women in education
- Present a new model for educator engagement to transform the classroom called Micromessaging



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# Questions and Comments?

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