



Engineering Inclusive Teaching

Faculty Professional Development

POWERED BY **WEPAN**

“Thriving vs. Surviving” A Four Frame Model for Creating Inclusive Learning Environments



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EIT Project Team



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EIT Project Goal & Strategies

To create engineering learning environments that support the persistence and success of all students, especially diverse women and minority men, by:

- Tailoring time-effective resources to engineering educators
- Distilling key research findings
- Sharing practical teaching advice
- Delivering convenient live/recorded webinars
- Providing easy-adoption checklists/resources



Beth Holloway



Dr. Beth Holloway is the Director of the Women in Engineering Program (WIEP) and the Assistant Dean for Undergraduate Education in the College of Engineering at Purdue University. As WIEP Director, she helps develop and administer research-based activities and programs to recruit and retain women in engineering from K to graduate school. As Assistant Dean, she is responsible for retention of undergraduate students. Holloway is the current chair of the Women in Engineering Division of the American Society for Engineering Education. Holloway received B.S. and M.S. degrees in Mechanical Engineering and a Ph.D. in Engineering Education, all from Purdue University.





Quick Poll #1

How many years have you been an educator?

- 1 year
- 2-5 years
- 5-10 years
- 10+ years





Quick Poll #2

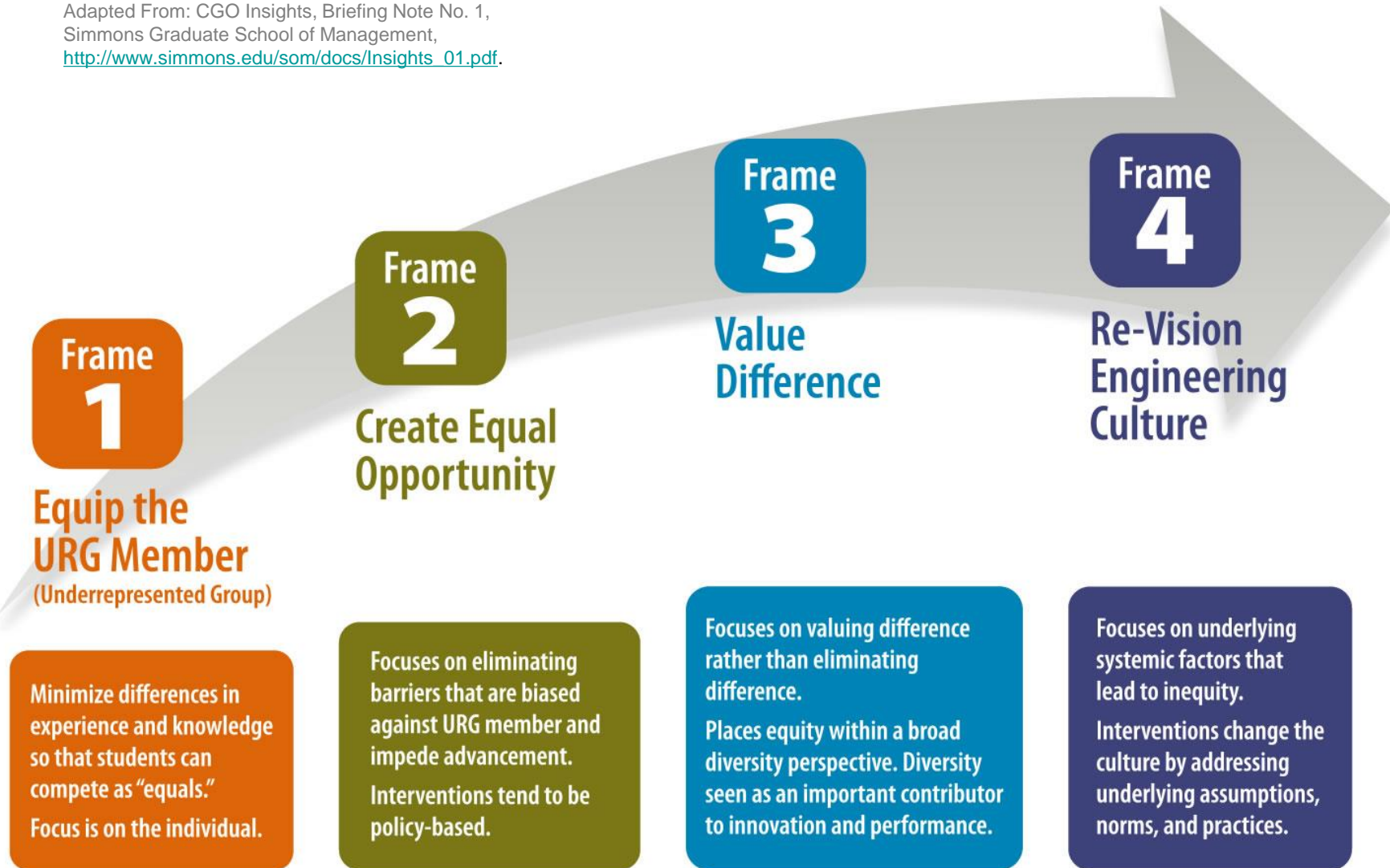
**What strategies have you used as an educator?
(Check all that apply.)**

- Provided special training for Under-Represented Group (URG) members (e.g. spatial visualization training, special classes or additional exercises)
- Organized class teams to ensure more than 1 URG member/team, if possible
- Highlighted the contributions of URG members within the discipline
- Emphasized the broader impacts of the engineering concepts taught in the class



A Framework for Promoting Equity

Adapted From: CGO Insights, Briefing Note No. 1,
Simmons Graduate School of Management,
http://www.simmons.edu/som/docs/Insights_01.pdf.



Frame 1: Equip the URG Member

- Assumption that URG members are deficient
- Remediation program examples:
 - Special machine shop training for minority men
 - Special training for women on spatial visualization skills





Raise Hands #1

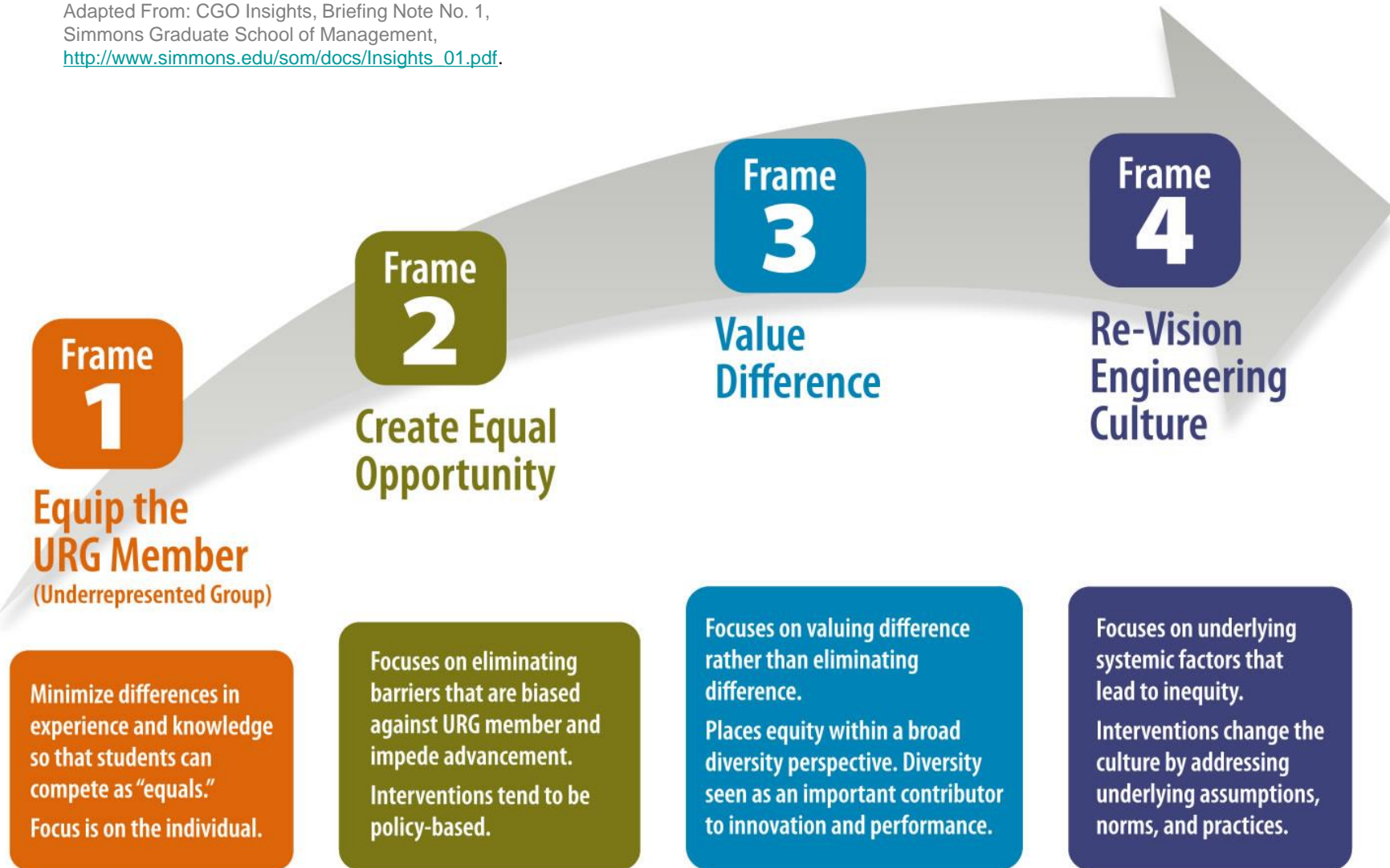
If you agree with the statement below click your “hand” icon:

“In educational environments with which I am familiar, there is little need to ‘level the playing field’ for students who are Under-Represented Group (URG) members.”



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Frame 2: Create Equal Opportunity

Examples:

- Require teams have more than one URG member.
- Require that team roles rotate or are pre-assigned so that all have equal opportunity to serve in leadership and team-support roles.





Raise Hands #2

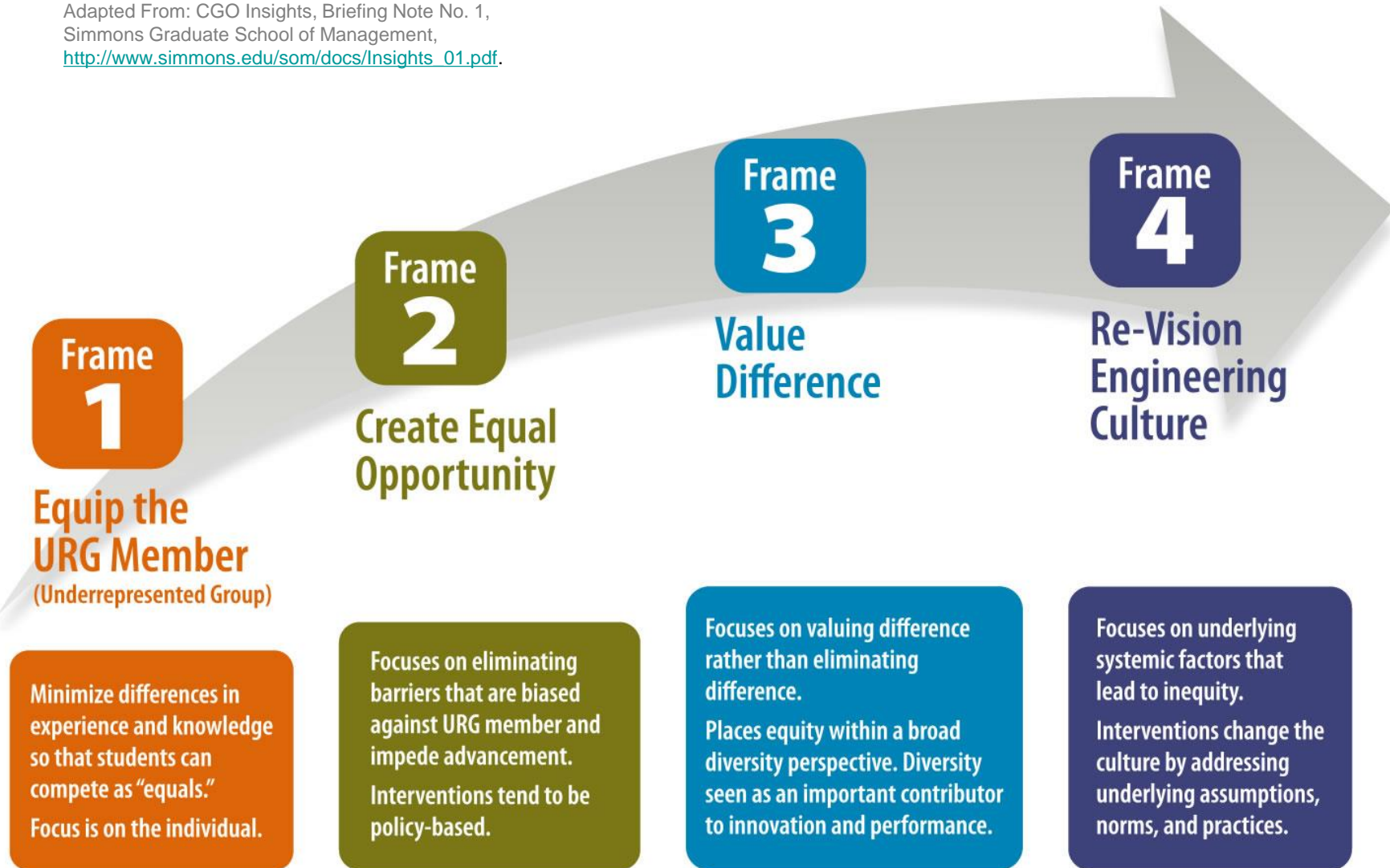
If you agree with the statement below click your “hand” icon:

“I make a point of bringing in presenters who are URG members.”



A Framework for Promoting Equity

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Frame 3: Value Difference

Examples:

- Make a special point to talk about the contributions of URG members to the field
- Encourage students members to take on team roles that best fit their strengths





Raise Hands #3

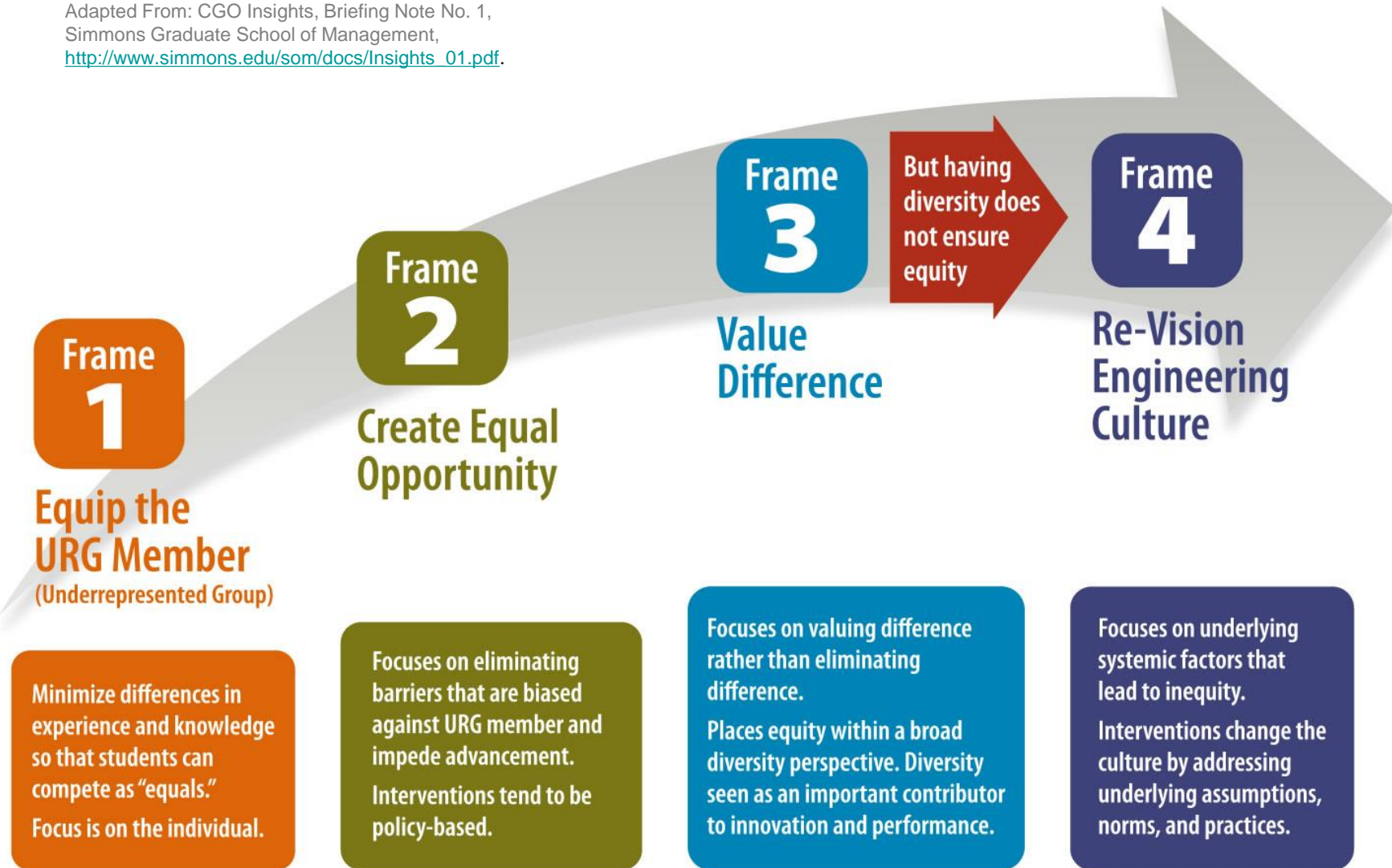
If you agree with the statement below click your “hand” icon:

“I have had discussions with colleagues about what an inclusive engineering culture would look like.”



A Framework for Promoting Equity

Adapted From: CGO Insights, Briefing Note No. 1,
Simmons Graduate School of Management,
http://www.simmons.edu/som/docs/Insights_01.pdf.



Frame 4: Change the Culture

- **Changing the Engineering Conversation**
 - Reframing of what engineering means – making sure to emphasize the socio-cultural aspects of engineering
 - Thriving dialog instead of surviving dialog
- **Curricular Changes**
 - Fundamental shift in pedagogy
 - Teamwork
 - Active learning
 - Collaboration
 - Instruction and levels of support
 - Inclusive examples
 - Innovation



Reflection

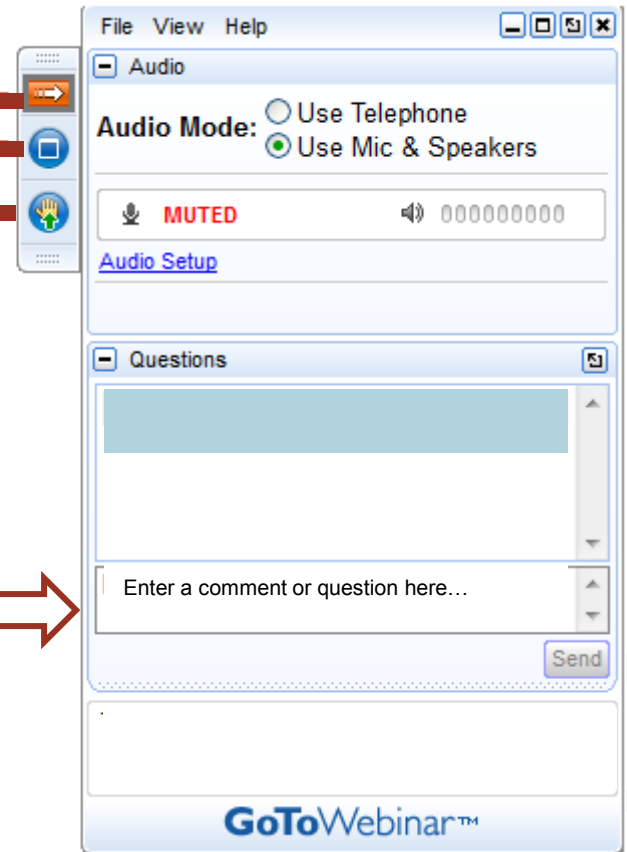
How are these frames valuable to the educator?

1. Equip the URG member
2. Create Equal Opportunity
3. Value Difference
4. Re-vision Engineering Culture

Hide/show control panel

Full screen

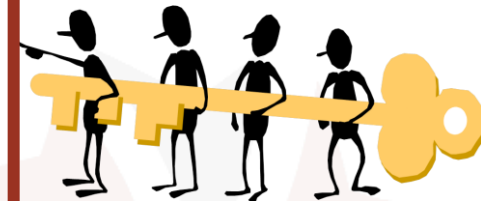
Raise hand



Question or
Comment pane

Summary of Key Points

- Frames 1-3 are traditional ways that people have tried to address equity
- Frame 4 is an emerging perspective for crafting equitable practices.
- All frames have (+) and (–) aspects and there are appropriate times and places to use strategies from each of the frames
- Educators need to understand the downsides of each frame so that you can mitigate negative impacts



Action Check-list (www.WSKC.org/EIT)

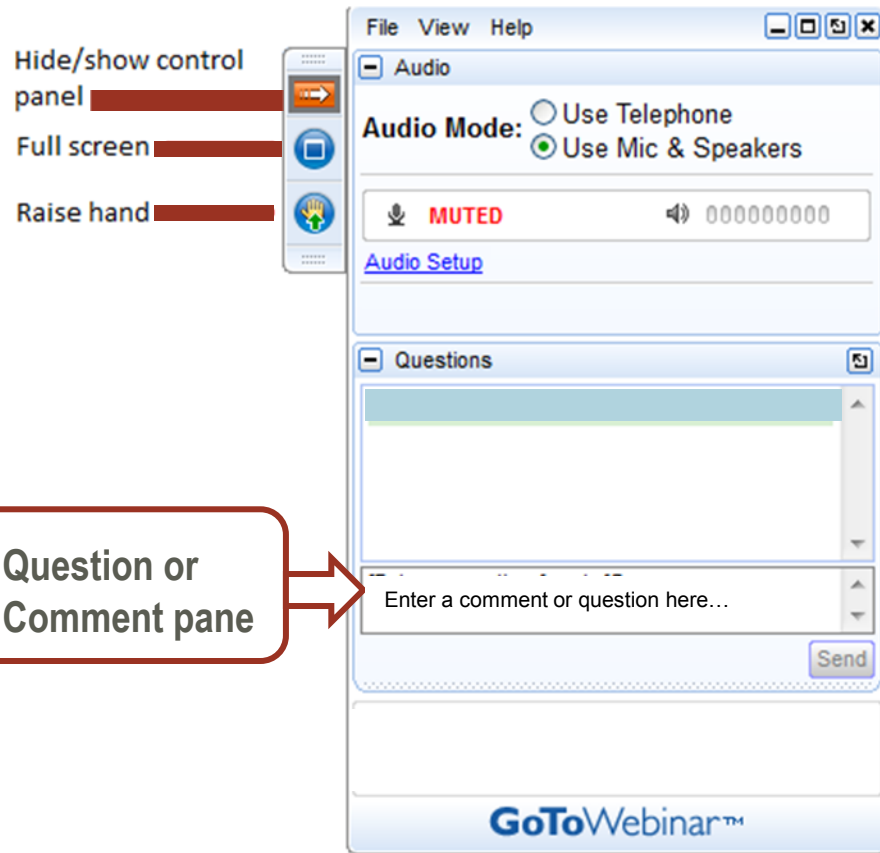
Frames	Reflections
Frame 1: Equip the Under-Represented Group (URG) member	<ul style="list-style-type: none"> • Am I making an assumption that URG members need special assistance to be successful? • Are there individuals in my classroom that need special assistance and am I aware of a variety of resources to help provide students an array of support, including URG member-specific support? • Do I share opportunities for skill enhancement with all members of the class? Or only with URG members? • Am I equally committed to the success of <i>ALL</i> students, not just the “best” students, and am I willing to do what it takes to provide opportunities for all to “thrive,” not just “survive.”
Frame 2: Create Equal Opportunity	<ul style="list-style-type: none"> • Are there barriers, within the learning environment created, that may inadvertently impact some students more than others based on their URG member status? • Are there specific policies or procedures I follow to ensure equity (e.g., selection process for teamwork,) am I aware of the implications of the selections strategies I am using, and do I have alternative strategies to mitigate unanticipated negative consequences? • Are my classroom policies transparent and designed to ensure fairness? • Are critical accommodations necessary for diverse learners?
Frame 3: Value Difference	<ul style="list-style-type: none"> • Do I provide reference to and/or showcase diverse engineers as a regular part of what I do in class., not simply as something “special.” • Do I seek to value and acknowledge the contributions and engagement of all the students, not just individuals that look like me. • Do I share diverse perspectives in problem solving engineering solutions? • Do I model support for and understanding of different perspectives? • Do I help students develop team-building and inclusive leadership skills?
Frame 4: Revision Engineering Culture	<ul style="list-style-type: none"> • Do I talk about “social” aspects of engineering that influence equity, such as implicit bias, micro-inequities, “fixed vs. growth mindset,” the ‘masculinization’ of engineering? • Do I seek input from students regarding their experience of equity within the classroom? • Do I talk with colleagues about what equity in engineering education and culture looks like? • Do I continue to reflect on how I can help prepare students for the diverse world in which they live and work?

Four Frames Action Assessment

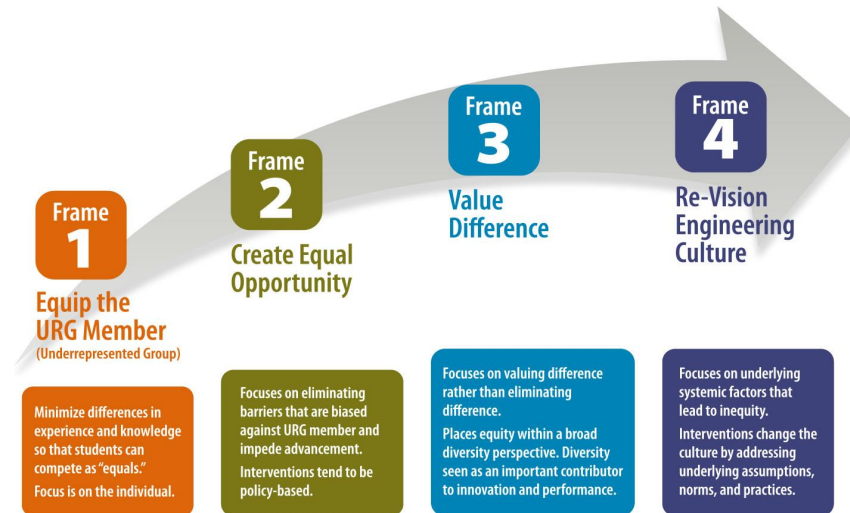
Frames	Activity or Action Taken	
	(+)	(-)
Frame 1: Equip the Under-Represented Group (URG) member		
Frame 2: Create Equal Opportunity		
Frame 3: Value Difference		
Frame 4: Revision Engineering Culture		

Asking Questions and Discussion

- Type questions in to “Questions Pane”



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 Director of the Women in Engineering Program (WIEP) and Assistant Dean for Undergraduate Education, College of Engineering



Personalized “To Do”

Now that you have heard this information, what are some things that you might want to do?



Next Steps

- Provide us Feedback
- Go to our website: www.WSKC.org/EIT
 - Participate in other live or recorded webinars
 - Use the *Action Checklists* & recommended reading
- Share this information with colleagues!



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**Together we can engage all minds
in engineering the future!**



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