Answering the How and Why Questions with Qualitative Research

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Session Goals

- Identify research questions that can be answered through qualitative methods.
- Describe several examples of qualitative research methods.
- Identify innovative qualitative techniques for eliciting and honoring the stories of students in STEM education.
- Allow participants to develop research questions and practice using the techniques.

Framing Questions

- How can academic affairs professionals and action researchers successfully draw out narratives and stories from underrepresented groups who may be reluctant to share their experiences?
- What are some best practices for sharing results from a project that investigates these experiences in depth?
- How can the results of qualitative research best inform practice and policy as it relates to underrepresented groups?

Today, we will:

- Share advantages and limitations of qualitative methods for academic affairs professionals and others.
- Share multiple methods for recruiting small sample interview participants.
- Provide methods for eliciting narratives from underrepresented groups
- Practice applying innovative data collection techniques to your institution.

Many in Higher Education May Prefer Quantitative Over Qualitative Research

- Familiarity with quantitative methods from researchers' own education, particularly in STEM disciplines.
- Lack of understanding about how to analyze qualitative data.
- Stakeholder preferences for quantitative data
- Burden of institutional review of research that engages human subjects.

Qualitative Research Allows Understanding

- Quantitative data is excellent at revealing **what** has happened to students with respect to major selection, retention, graduation, and survey responses.
- Qualitative data collection helps us understand the reasons **how and why** certain outcomes occurred for individuals or groups.
- Qualitative data analysis may help uncover unexpected patterns in data.

Today, we will:

- Share advantages and limitations of qualitative methods for academic affairs professionals and STEM educators.
- Provide tools for conducting qualitative research.
- Provide methods for eliciting narratives from underrepresented students and other key informants.
- Practice applying innovative data collection techniques to research questions.

Have you wondered…

- What it's like to be the first in a family to attend college?
- How welcoming your campus is to LGBTQ+ students?
- How disabilities affect some students' experiences?
- What issues student veterans face when transitioning to your institution?

Methods we will cover today:

- Conducting effective focus groups using in-group exercises
- Using identity exercises to facilitate individual interviews.
- Synthesizing multiple sources of data to answer questions about personal and contextual factors that affect student experiences and success.

Techniques for Focus Groups

Visualization Techniques

- Allow researchers to get a sense of the group to guide further questions.
- Relatively quick.
- Allow participants to place themselves on various scales rather than the researchers having to guess or infer.
- Prelude to analysis.
- We'll show you a few ways that we have used in our research.

What is your current role/position as it relates to Diversity and Inclusion?

Student Affairs	Women's program coordinator	Dean/chair/ other admin
Minority program coordinator	Academic Success/Support	Faculty
Institutional Research	Admissions	Transfer Coordinator
Other role	Other role	Other role

Our Research: Engineering Identity

- Engineering identity is whether an individual considers themselves to have the characteristics of other people in the group.
- We wanted to find out how much student veterans feel like they belong in undergraduate engineering.
- We adapted an Engineering Identity Scale that is often used with first year students to the focus group format and our students in particular.

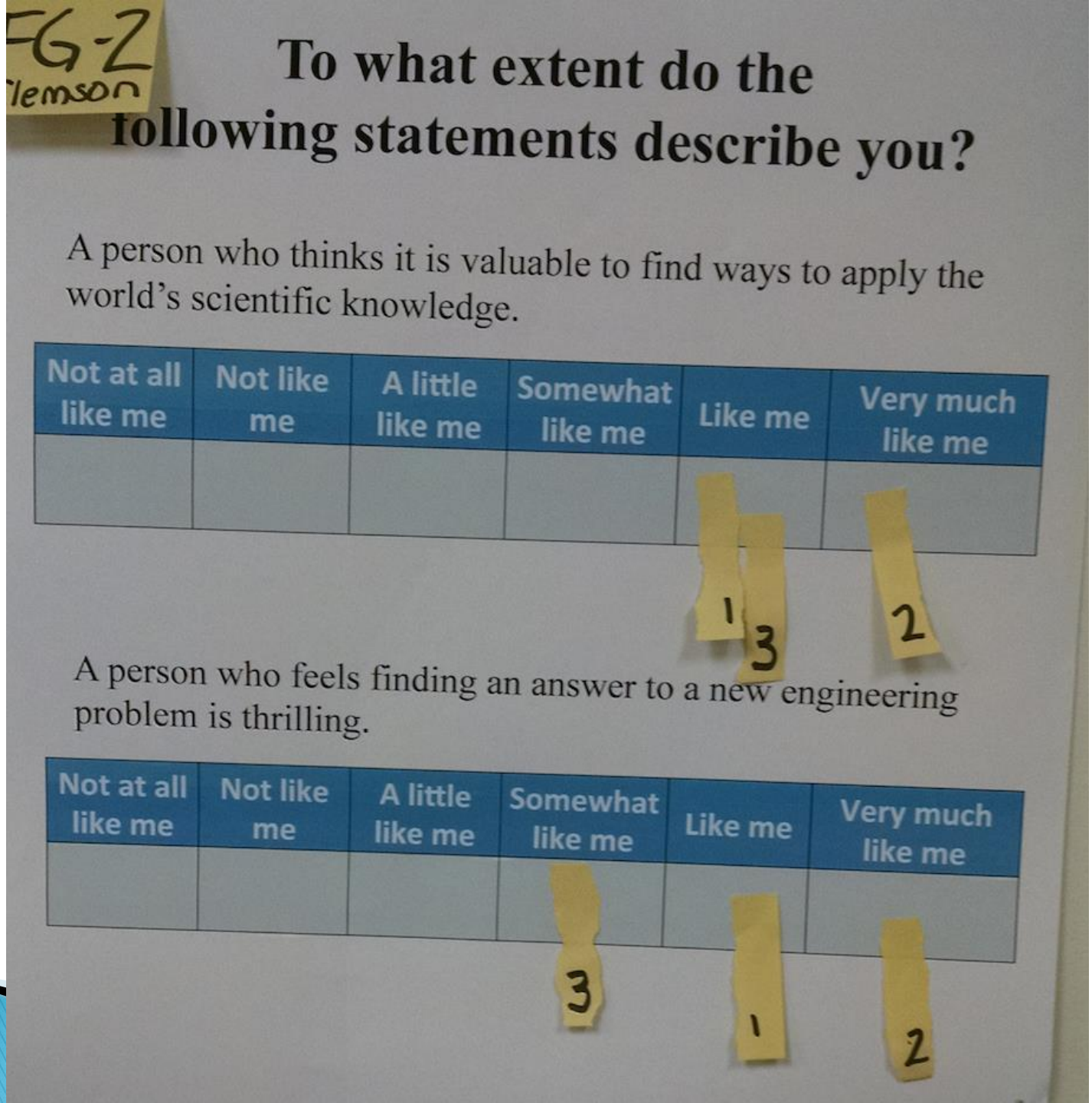
To what extent do the following statements describe you?

A person who thinks it is valuable to find ways to apply the world's scientific knowledge.

Not at all like me	Not like me	A little like me	Somewhat like me	Like me	Very much like me

A person who feels finding an answer to a new engineering problem is thrilling.

Not at all like me	Not like me	A little like me	Somewhat like me	Like me	Very much like me


FG-2
Clemson
To what extent do the following statements describe you?
A person who thinks it is valuable to find ways to apply the world's scientific knowledge.
Not at all like me
Not like me
A little like me
Somewhat like me
Like me
Very much like me
1
3
2
A person who feels finding an answer to a new engineering problem is thrilling.
Not at all like me
Not like me
A little like me
Somewhat like me
Like me
Very much like me
3
1
2

To what extent do the following statements describe you?

A person who..	Not at all like me	Not like me	Like me	Very much like me
Thinks it's valuable to find ways to apply the world's scientific knowledge		4		1 2 3
Feels finding an answer to a new engineering problem is thrilling			3 4	1 2
Thinks engineers discussing new technologies and how they operate is important		4	3	1 2
Thinks advances in engineering can solve many of the world's problems	4	2		1 3

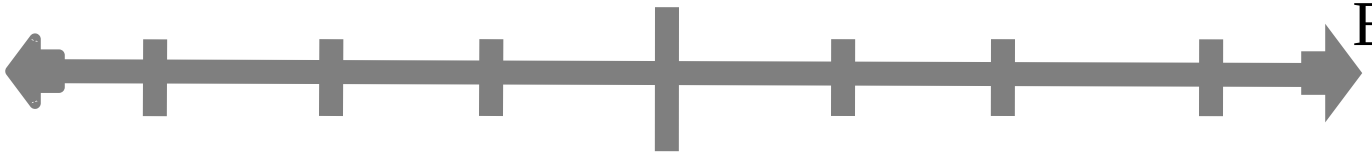
To what extent do the following statements describe you

A person who..	Not at all like me	Not like me	Like me	Very much like me
Thinks it's valuable to find ways to apply the world's scientific knowledge			3.6	
Feels finding an answer to a new engineering problem is thrilling			3.7	
Thinks engineers discussing new technologies and how they operate is important			3.6	
Thinks advances in engineering can solve many of the world's problems			3.4	

Your Turn: To what extent would you say that faculty and students on campus are able to easily identify....

Veterans

No one knows



Everyone knows

1st Generation Students

No one knows

Everyone knows

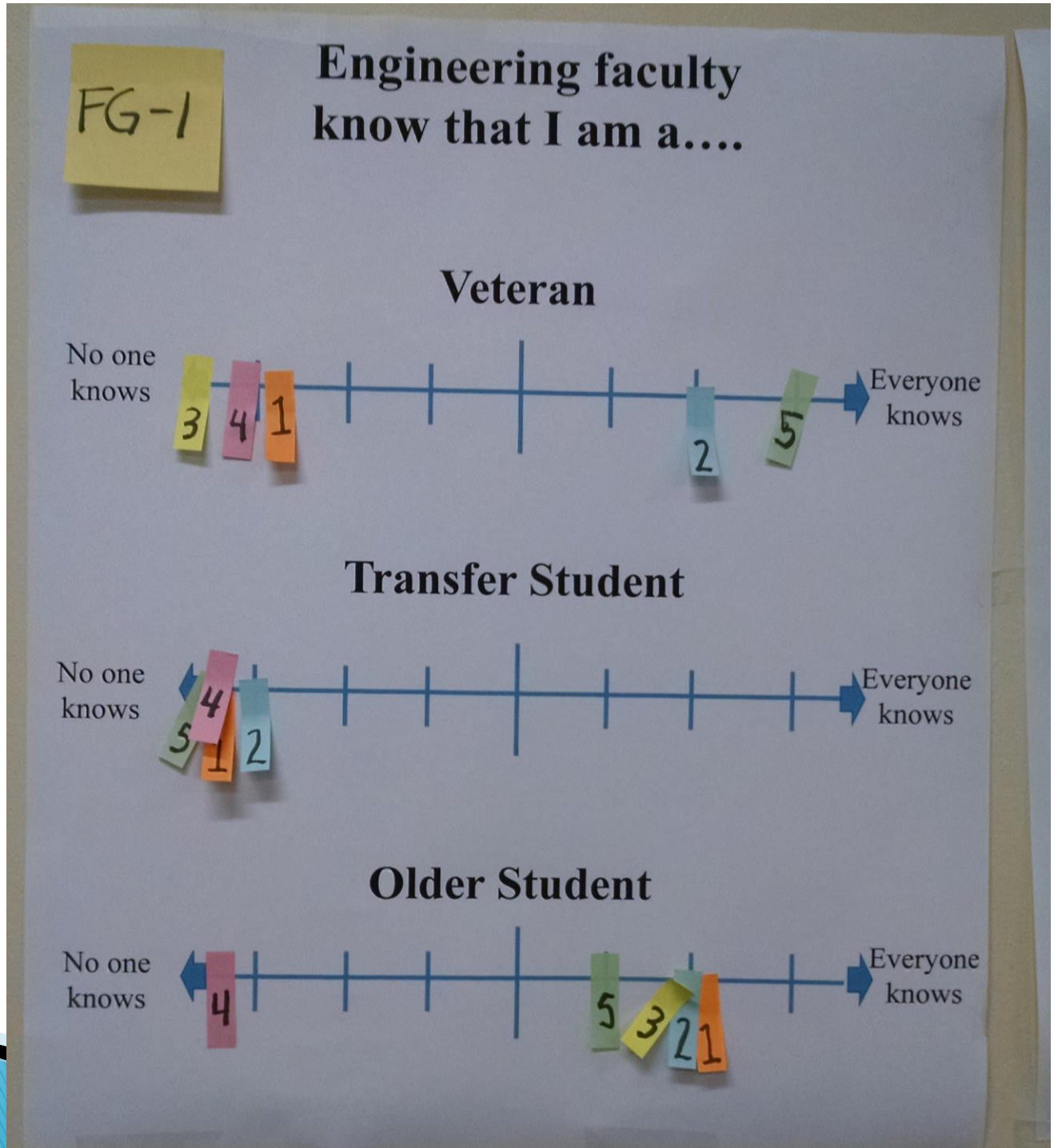
Students with Disabilities

No one knows

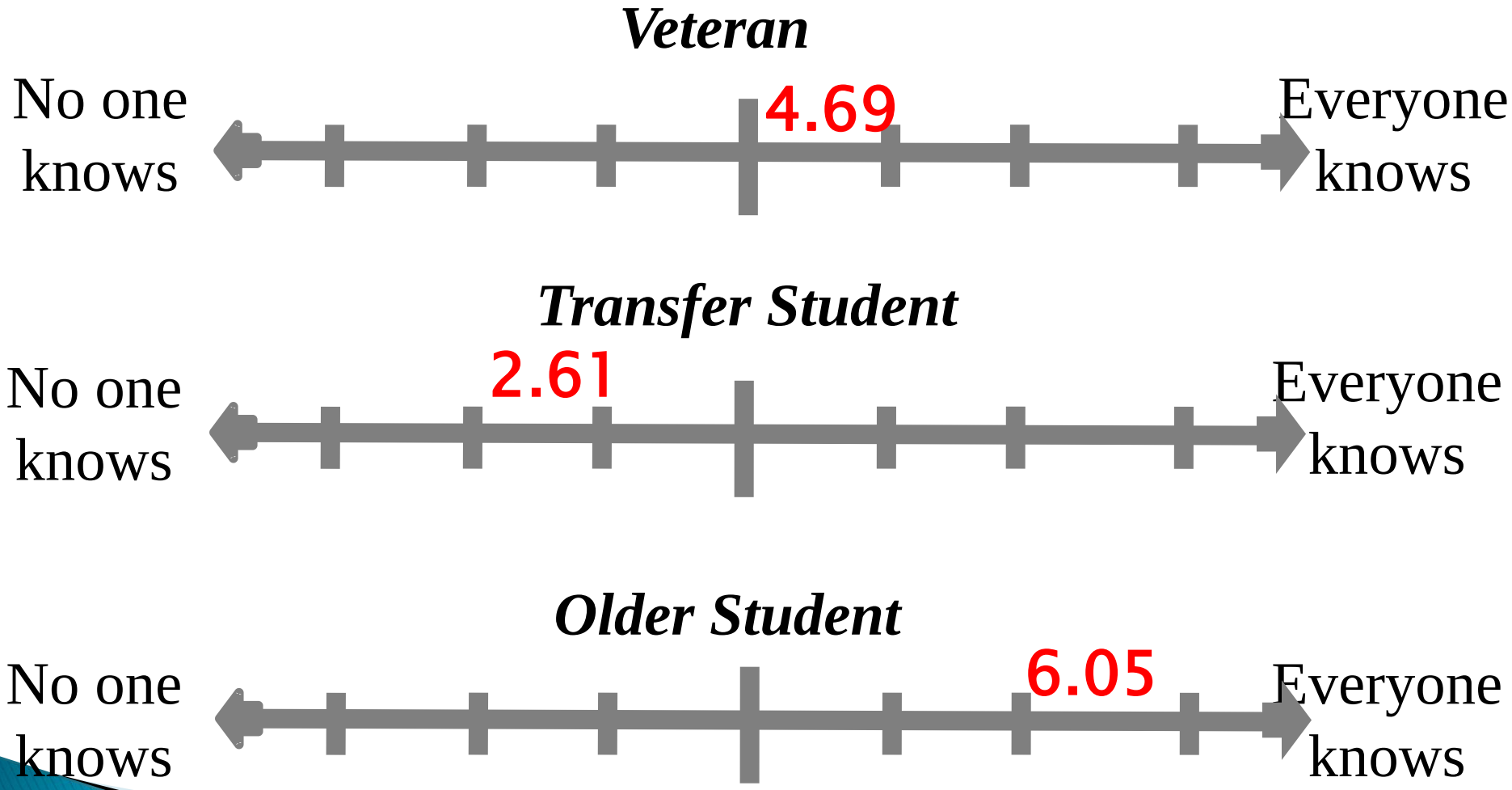
Everyone knows

Example: Student veteran identity vis-à-vis faculty and other students

- We wanted to learn how the student veterans felt that they were perceived by faculty and other students.
- We also wanted them to help us parse out the difference between being a veteran, a transfer, and generally older.
- Having them provide this detail kept us from having to guess or infer from their other answers…or pry too deeply.

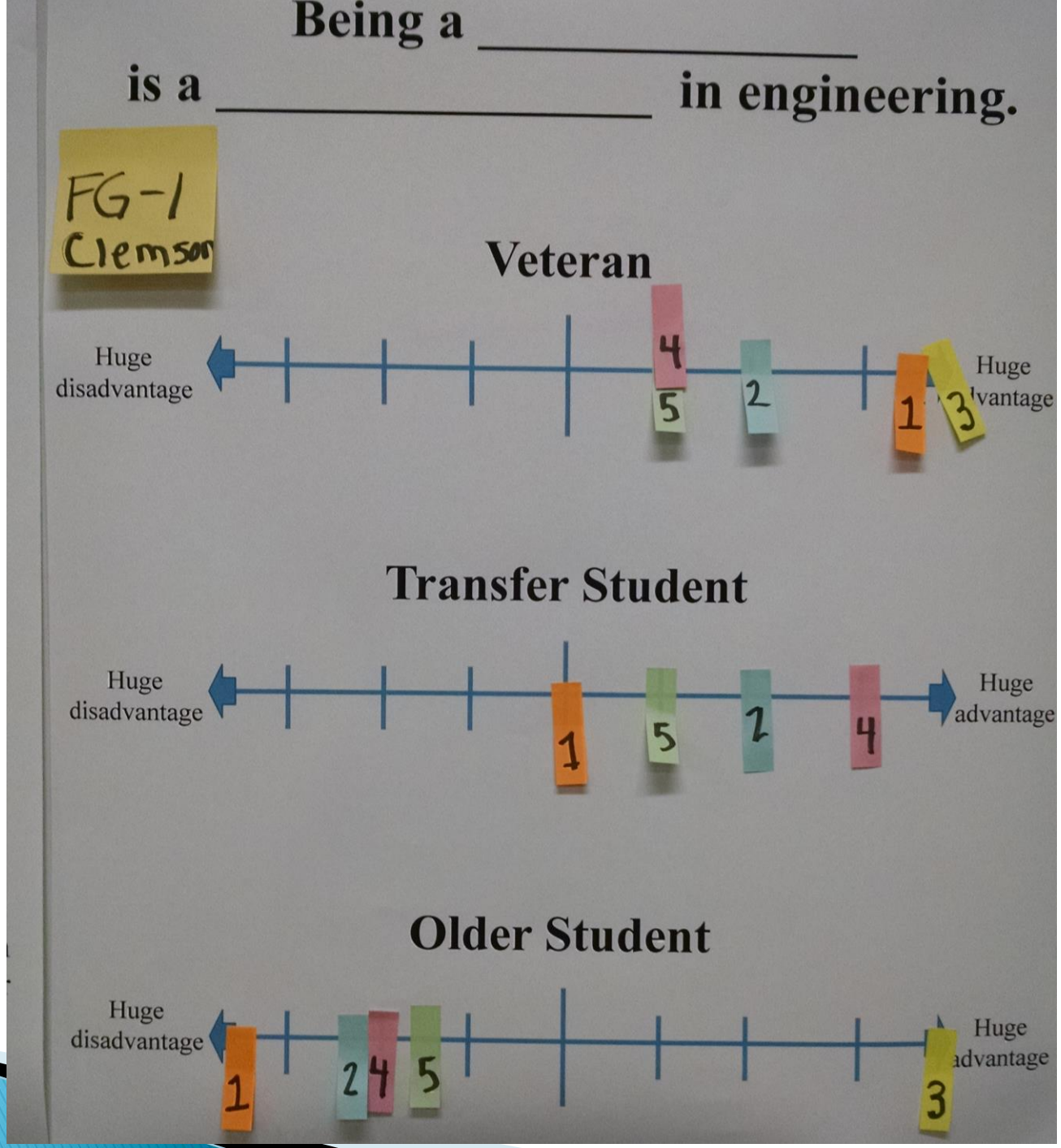

FG-1
Engineering faculty know that I am a….
Veteran
No one knows
3
4
1
2
5
Everyone knows
Transfer Student
No one knows
5
4
1
2
Everyone knows
Older Student
No one knows
4
5
3
2
1
Everyone knows

Engineering faculty know that I am a....



Potential advantages/disadvantages of various identities

- We wanted to know the advantages and disadvantages to the students of being a veteran vs. a transfer student vs. an older student


Being a _____
is a _____ in engineering.
FG-1
Clemson
Veteran
Huge disadvantage
4
5
2
1
3
Huge advantage
Transfer Student
Huge disadvantage
1
5
2
4
Huge advantage
Older Student
Huge disadvantage
1
2
4
5
3
Huge advantage

Focus Group Technique Summary

- The purpose of the various exercises was to:
  - Avoid a dull series of linear questions.
  - Stimulate a free-flowing discussion on these various dimensions and provide a visual reference for everyone in the room.
  - Have the respondents help us draw conclusions about the impact of their various identities on their interactions and experiences in their engineering studies.

Your Turn (Think-Pair-Share)

- What research questions or questions for practice do you have that might be suited to qualitative research and a focus group format?
- What sorts of interactive activities might you be able to create to help answer those questions?

Techniques for Individual In-Depth Engineering Student Interviews

Student Qualification Survey

- To recruit participants, we posted flyers around campus and asked campus contacts to e-mail student veterans in engineering.
- The qualification survey
  - protected the students' confidentiality
  - provided a place to give IRB-required informed consent
  - allowed us to gather demographic, military service, and scheduling information.

Demographic Characteristics (n=29)

Age		***Race***	
<20	1	Caucasian/White	27
23-25	6	African-American/Black	2
26-30	16		
31+	6		
Gender		***Significant family responsibilities?***	
Male	28	Yes	12
Female	1	No	17

Military Experience

Branch(es)	#	*Years of service*	#
Navy	13	5 or fewer	14
Marine Corps	7	6 to 10	12
Air Force	3	11 to 15	2
Army	3	15 to 20	0
Multiple	2	More than 20	1
Coast Guard	1		

Life History Exercise

Once the students agreed to be interviewed, we asked them to fill out a life history exercise in advance. This served as an ice breaker when students were asked to talk through the various events from when they graduated from high school to the present.

Q3

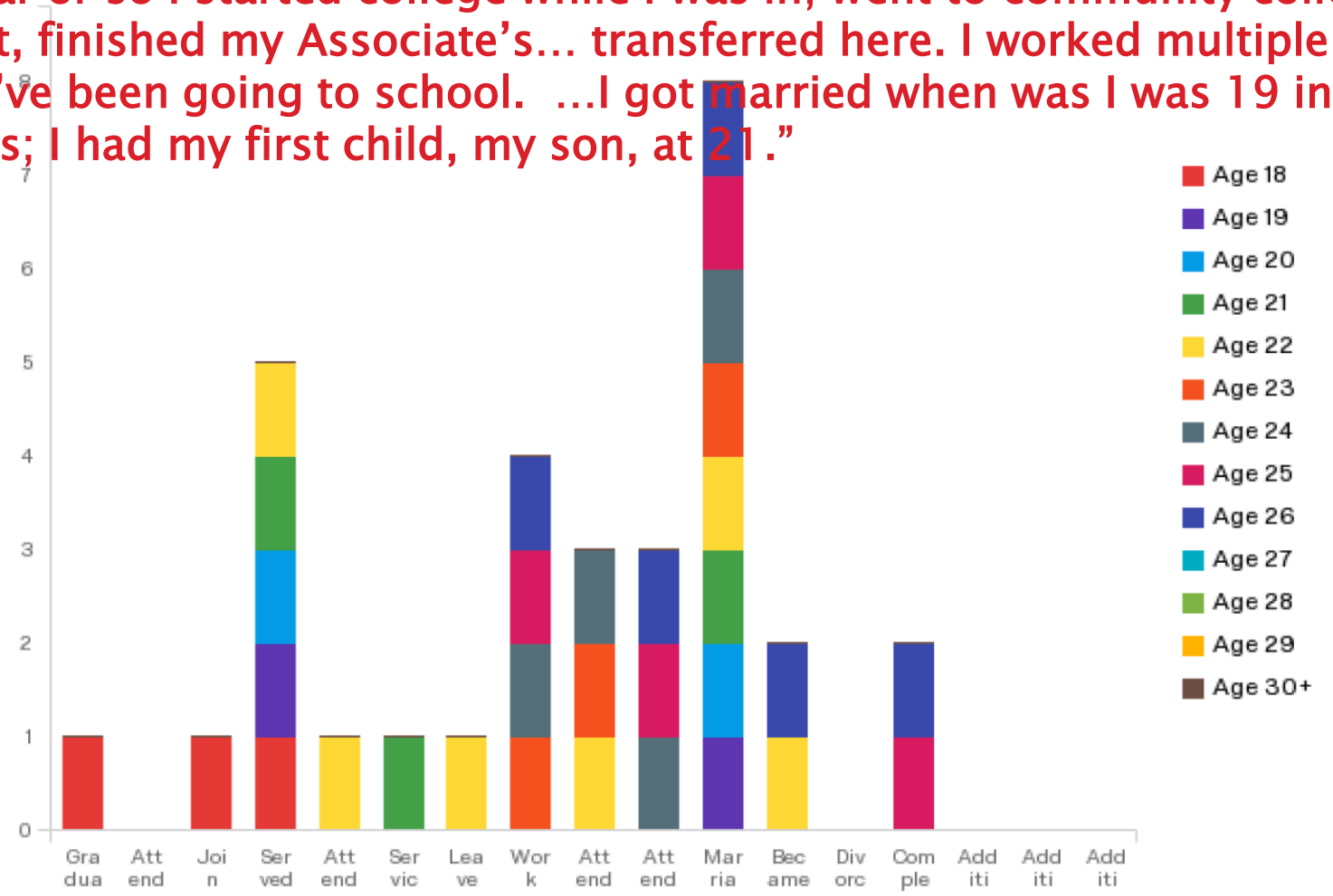
Please indicate the age(s) at which you experienced the following events. Check all the ages that apply to each event. Choose "N/A" if you have not experienced a particular event.

	Age 18	Age 19	Age 20	Age 21	Age 22	Age 23	Age 24	Age 25	Age 26	Age 27	Age 28	Age 29	Age 30+	× N/A
Graduated from high school	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Attended college before joining military	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Joined the military	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Served in the military	☐	☐	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐
Attended classes/school while in the military (other than training)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Experienced a service-related injury/disability	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐

	Age 18	Age 19	Age 20	Age 21	Age 22	Age 23	Age 24	Age 25	Age 26	Age 27	Age 28	Age 29	Age 30+	× N/A
Left the military	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐
Worked at a paid job outside of the military	☐	☐	☐	☐	☐	☐	☐	☐	☑	☑	☐	☐	☐	☐
Attended college(s) before Clemson University	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Attended Clemson University	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☑	☑	☐	☐
Marriage (mark all years married)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Became a parent	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Q3 - Please indicate the age(s) at which you experienced the following events. Check all the ages that apply to each event.

"I didn't do very well in high school… So, getting into college was pretty much a non-issue, I just didn't have the grades for it and didn't have the money for it. I joined the Marine Corps directly out of high school. Served four and a half years but about two and a half years in I got injured…The last year or so I started college while I was in; went to community college, got out, finished my Associate's… transferred here. I worked multiple jobs while I've been going to school. …I got married when was I was 19 in the Marines; I had my first child, my son, at 21."



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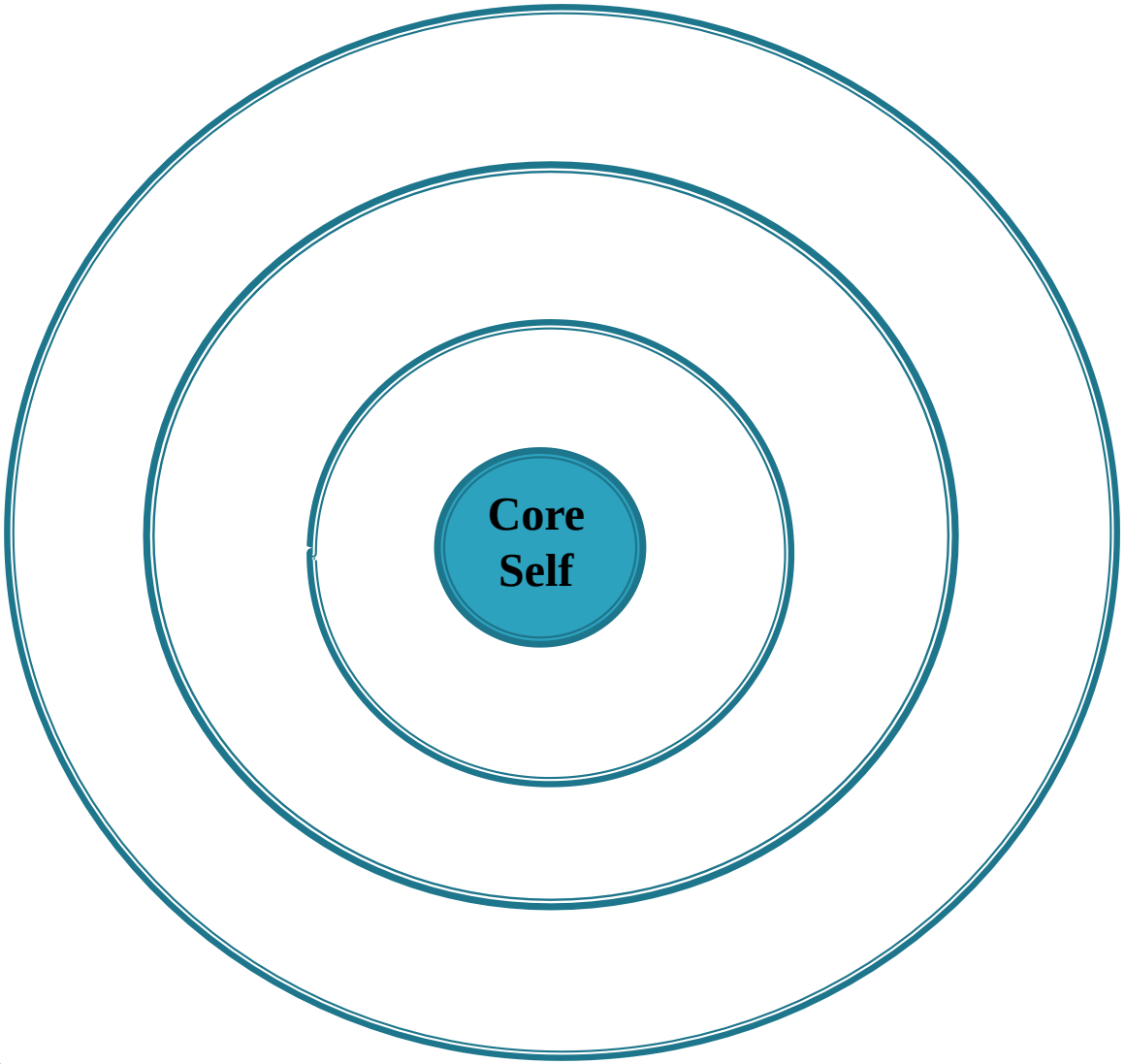
Identity Circle Exercise

- Helped us discover how important veterans' different identities are to their "core" sense of self.
- Facilitates discussion around potentially difficult topics such as combat-related disabilities, sexism, and racism, without having to ask about these issues directly.
- "Think aloud" protocol

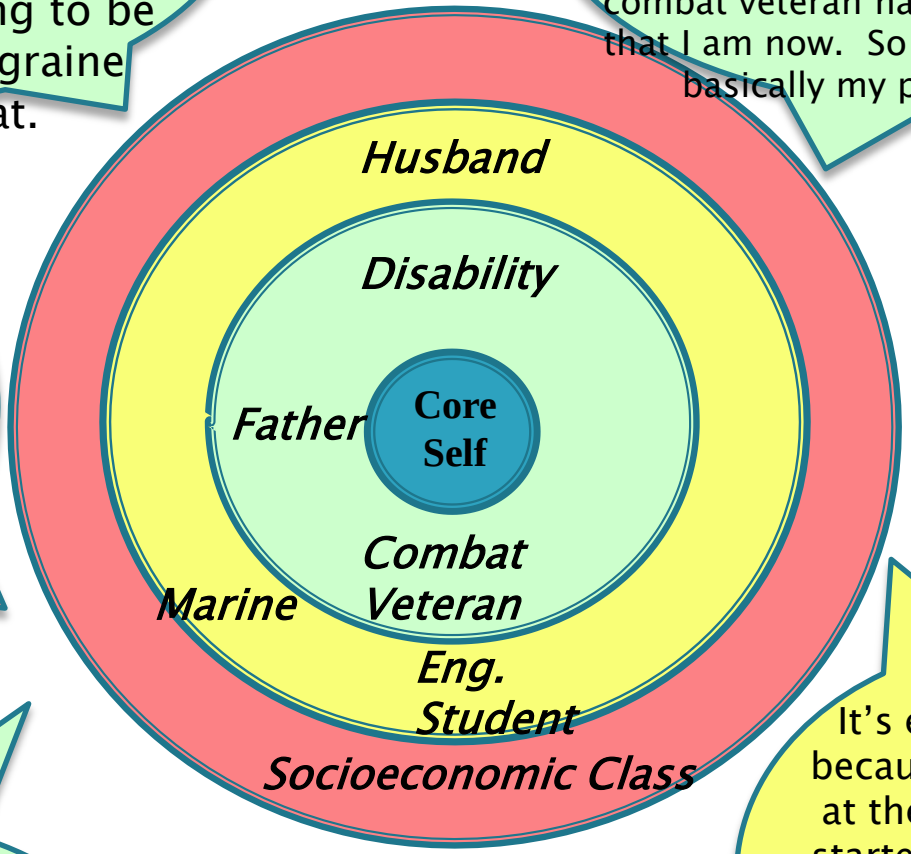


SELF
Gender
Race/ethnicity
Socioeconomic Class
Sexual orientation
Age
Religion
AT HOME
Spouse/partner
Parent
Caregiver
Single
SERVICE-RELATED
Veteran in general
Veteran of a Specific Branch
Combat Veteran
Reservist
Disability
STUDENT/WORKER
Engineering Student
Transfer Student
First-generation student
Employee
Volunteer

Another important thing in the central ring is my disability …that essentially affects…every choice I make because … I have to determine if my body's going to let me or if I'm going to be debilitated with a migraine or things like that.

Closest to the center I'd say the two most important things in my being are being a combat veteran and being a father. My kids are the driving force in me trying to better myself and get to a point where I can provide for them. And alternatively being a combat veteran has influenced everything that I am now. So those two things affect basically my past and my future.

Socioeconomic class is kind of on here but just not much because it is a driving factor, I want to be above the class that I was raised in and to continue to provide better for my family the way my parents tried to but weren't really able to.



My son is almost five now so it's like, you know, I've missed a lot of his life by trying to put us in a better position in the future.

It's engineering student because it is important but at the same time I kind of started to see I don't know how much I'm going to enjoy actual engineering as an engineer unless I find a job that really, really challenges me.

Your Turn: IDENTITY CIRCLE

Place the identities below that apply to you [you may add others] on one of the rings **to illustrate how "central" a particular part of your identity is to your current educational experiences**. For example, if the most salient or important part of your identity is being a parent, you would place the dot on the first ring surrounding the inner core. You don't necessarily need to add all of the identities listed below to the diagram, just those that are most central to your current educational experiences.

Identity Circle Discussion

- How did you feel as the interviewee?
  - Were you more or less likely to reveal something personal about yourself using this exercise than if you had been asked directly?
- How did you feel as the interviewer?
  - Did you feel that you were more or less able to gain insight than you would using a different way to ask the questions?

Interview Technique Summary

- The purpose of the various exercises was to:
  - Break the ice – so participants would feel comfortable talking with us.
  - Approach personal issues, such as disability or socioeconomic status or sexual orientation, with respect, while encouraging participants to reveal issues that impact their decision making and their experiences.
  - Allow us to learn quickly what motivates a student from an underrepresented group without asking a long series of questions.

Your Turn: Think-Pair-Share

- What research questions do you have that might be suited to an individual in-depth interview format?
- What sorts of interactive activities might help answer those questions?

Summary

- Focus groups and interviews allow decision makers to learn why individuals behave as they do.
- Triangulation, or the use of different measurements (e.g., focus groups and interviews), for the same concept strengthens our understanding of the social phenomena that we are researching.
- Qualitative data can also explain quantitative findings from other sources (e.g., institutional research and surveys)
- Multiple methods can also illuminate differences that need to be explored further.

Thank you!

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- Questions?

National Science Foundation
WHERE DISCOVERIES BEGIN