

2019 STEM Cultural Colloquium Event Report

This report serves to memorialize the presentations and discussions that took place during the 2019 STEM Cultural Colloquium. The session was not recorded. Comments from individual participants are not verbatim and were taken from event minutes.

About the Colloquium

A 1-day event hosted by STEM Collaborative Center, the 2019 STEM Cultural Colloquium: Getting at the Gap aimed to bring together professionals from STEM initiatives across campus, to engage in dialogue about how to best structure and implement STEM programs for optimal levels of student success. The colloquium focused particularly on the success of STEM students from underrepresented populations. The event included presentations from some of UNM's esteemed leaders in STEM initiatives, and aimed to provide a diverse array of perspectives on how to better meet student success objectives. The first event of its kind was hosted by STEM Gateway in 2017.

Colloquium Purpose

The colloquium's purpose was to discuss some of the issues related to STEM education in the state for underrepresented students that do not get addressed like imposter phenomenon, sense of belonging, non-cognitive variables, micro-aggressions, self-management skills, and more. These issues disproportionately impact underrepresented students, specifically those of color, and hinders realization of their capabilities. Although this event was targeted towards stakeholders with an interest in supporting STEM students, we highly encouraged all individuals interested in these topics or student success to attend.

2019 STEM Cultural Colloquium

Getting at the Gap

FRIDAY, SEPTEMBER 6TH, 2019 ■ 8:30 AM - 3:30 PM
STUDENT UNION BUILDING ■ BALLROOM A

COLLOQUIUM GOALS »

1. TO BETTER UNDERSTAND UNDERREPRESENTED POPULATIONS IN STEM.
2. TO INCREASE AWARENESS OF ISSUES THAT LEAD TO THE EDUCATIONAL GAPS IN ACHIEVEMENT.
3. TO MOVE BEYOND A CONVERSATION BY DEVELOPING PROCESSES, PROGRAMS, AND MINDSETS THAT ADDRESS GAP REDUCTION.

PROGRAM »

8:30 - 9:00 am » Registration and Breakfast

9:00 am » Welcome

Tim Schroeder, Ed.D. Director, STEM Collaborative Center/Operations Director, UNM Grand Challenges Initiative.

9:10 am » Opening - "Inclusion Today and the Promise of Innovation Tomorrow"

Assata Zerai, Ph.D. VP of Equity and Inclusion.

9:40 am » Panel Discussion: Undergraduate STEM Student Perspective.

Anoton Perez - Film & Digital Media Arts, **Arely Ortega** - Nursing, **Ivan Nunez** - Computer Engineering, **Michael Salazar** - Biology.

10:25 am » "UNM's STEM Student Murky Middle"

Yadéeh Sawyer, Ph.D. Program Specialist, STEM Collaborative Center & Engineering Student Success Center.

11:10 am » Break

11:25 am » Key Note Address - "Walking in Beauty on an Ever-Changing Path - a Native Woman Engineer's Perspective"

Sandra Begay, MSCE. UNM Board of Regents Secretary.

12:10 pm » Lunch and Panel Discussion: UNM Programs and Support Services

Caitlin Henke - Women's Resource Center, **Daniel Begay** - American Indian Student Services, **Dayra Fallad-Mendoza** - Center for Academic Program Support (CAPS), **Doug Williams** - Engineering Student Success Center, **Moises Ibarra** - Arts and Sciences Advisement, **Patricial Lott** - African American Student Services, **Yessenia Ruiz** - El Centro de la Raza.

1:25 pm » Breakout Session and Group Discussion

2:40 pm » Closing - "Raise Your Hand: A Call to Action"

Valerie Romero-Leggott, M.D. Vice Chancellor and Chief Diversity Officer/Executive Director, UNM SOM Combined BA/MD Degree Program.

3:10 pm » Thank You and Evaluations

Tim Schroeder, Ed.D. Director, STEM Collaborative Center/Operations Director, UNM Grand Challenges Initiative.

Master of Ceremonies: Jose Villar, MBA.



STEM
COLLABORATIVE
CENTER



COLLEGE
ENRICHMENT
PROGRAM



SCHOOL OF
ENGINEERING

Welcome and Overview of UNM's College Enrichment Program (CEP)

CEP provides programs for outreach from pre-University and transition to university, through transition into graduate school. Their focus on underrepresented students.



**You're
here for a
reason**

**Take a
minute
to think /
write**

Take a minute to think about why you are here. What do you want to leave with? Now make sure that you are able to leave with what you came for.



Colloquium Goals

1. To **BETTER UNDERSTAND** underrepresented populations In STEM.
2. To **INCREASE AWARENESS** of issues that lead to educational gaps in achievement.
3. To **MOVE BEYOND A CONVERSATION** by developing processes, programs, and mindsets that address gap reduction.

The 3rd Goal is especially important. We want to not just write notes that sit on a desk, but have discussions of our ideas and try to implement something by the end of the colloquium.

***Welcome to the
2019 STEM
Cultural
Colloquium!***



**Tim Schroeder,
EdD**

*Director, Stem
Collaborative Center*

*Grand Challenges
Operations Director*

**2019 STEM
Cultural Colloquium**
Getting at the Gap

Good Morning, and welcome to the STEM Cultural Colloquium.

It is our hope that today's conversations will help us to develop a stronger shared understanding of how we can better support our underserved STEM populations.

Thank you for joining us for today, and for all of your continued hard work, dedication and creativity in educating UNM's students.

I would like to extend a special THANK YOU to Yadeeh Sawyer for her vision, research and organization in coordinating this event. I would also like to thank the Colloquium planning committee for their hard work and insights.

Today's Colloquium follows in the footsteps of the 2016 STEM Gateway Cultural Colloquium, which was held in the final year of the STEM Gateway grant. Similarly, this year marks the conclusion of the STEM Collaborative Center Grant.

The work of the STCC has been fruitful and enjoyable, and our successes have been the result of individuals across campus, some of whom I would like to recognize today.

First, thank you to our P.I. Tim Guterrez for his leadership and unwavering support. Thank you to our many staff, student, administrator and faculty partners. Throughout our five years, we have been blessed to work with dedicated educators on our Oversight Council, through our Mentoring Program, on over 100 STEM Summer events, on our Discover STEM events, and through our many collaborative projects. Thank you to all of you who made the STCC such a success.

Finally, I would like to thank the team who worked tirelessly to serve the STCC's students throughout the course of our five years. It has been a privilege to work with these individuals. Thank you to the STCC staff, past and present!

I would also like to thank and introduce our first speaker this morning, Dr. Assata Zerai. Dr. Zerai's started her journey in higher education by earning a B.A. in Sociology from Anderson University, followed by both her M.A. and Ph.D. in Sociology from the University of Chicago. At the University of Illinois Urbana-Champaign, Professor Zerai served as Director of Graduate Studies in Sociology, Director of the Center for African Studies, Associate Dean, and Associate Chancellor for Diversity and Associate Provost for Faculty Excellence.

Dr. Zerai's research areas include Race, Class and Gender analyses, Gender Equity and Development Effectiveness, National and Cross-Cultural Health Inequality, and Adaptations of Safe Water and Sanitation Technologies, among others. This fall, Dr. Zerai joined UNM as Vice President for Equity and Inclusion and Professor of Sociology. We are delighted to welcome her to UNM, and we look forward to her opening remarks. Please join me in welcoming Dr. Assata Zerai.

Inclusion Today and the Promise of Innovation Tomorrow



2019 STEM Cultural Colloquium Getting at the Gap

Dr. Assata Zerai

*Vice President of Equity
and Inclusion, UNM*

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INCLUSION TODAY AND THE PROMISE OF INNOVATION TOMORROW

ASSATA ZERAI, PH.D., VICE PRESIDENT FOR EQUITY AND INCLUSION
PROFESSOR OF SOCIOLOGY
PRESENTATION TO THE 2019 STEM CULTURAL COLLOQUIUM:
GETTING AT THE GAP



Enhancing learning experiences of students in STEM disciplines is such an important topic. I am so pleased to be a part of this conversation today.

EQUITY AND INCLUSION AT THE UNIVERSITY OF NEW MEXICO: EXPANDING OPPORTUNITY AND CULTIVATING GENIUS

...AY2020 Theme of the Division for Equity and Inclusion

Goals realized by:

- Building more diverse pools for faculty searches
- Revamping DEI postdoc program with goal of creating a stronger pipeline to tenure track positions
- Working with college-level diversity officers on climate issues in units
- Planning for a 2020-21 campus climate survey
- Educating faculty to be better mentors, instructors, and lab leaders to all students and to underrepresented minority (URM) and women students specifically



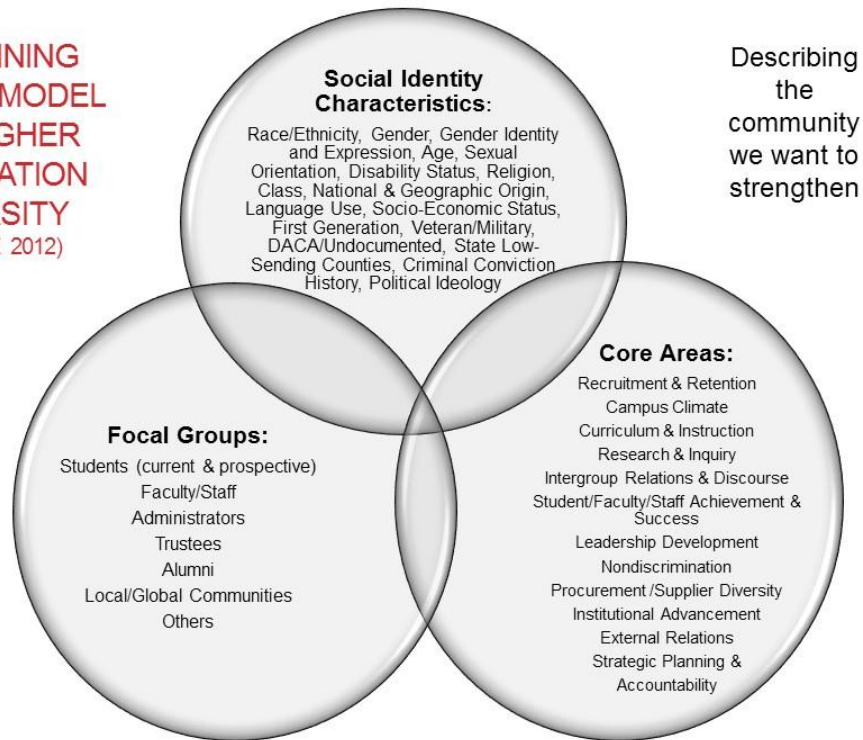
We hope to address these goals by engaging a handful of initiatives in the near future.

PRESENTATION OBJECTIVES

- Share 2020 theme and plans for Division of Equity and Inclusion (DEI)
- Discuss DEI's adaption of The National Association of Diversity Officers in Higher Education's (NADOHE's) 3-dimensional model of diversity
- Examine UNM's (main campus) undergraduate student data
- Introduce organizational theory and educational research examining the strengths of diverse and inclusive academic groups
- Explore ways in which faculty-capacity approaches are crucial to increasing the likelihood of better student outcomes
- Conclude with thoughts about student-centered approaches



**BEGINNING
WITH MODEL
OF HIGHER
EDUCATION
DIVERSITY
(NADOHE 2012)**

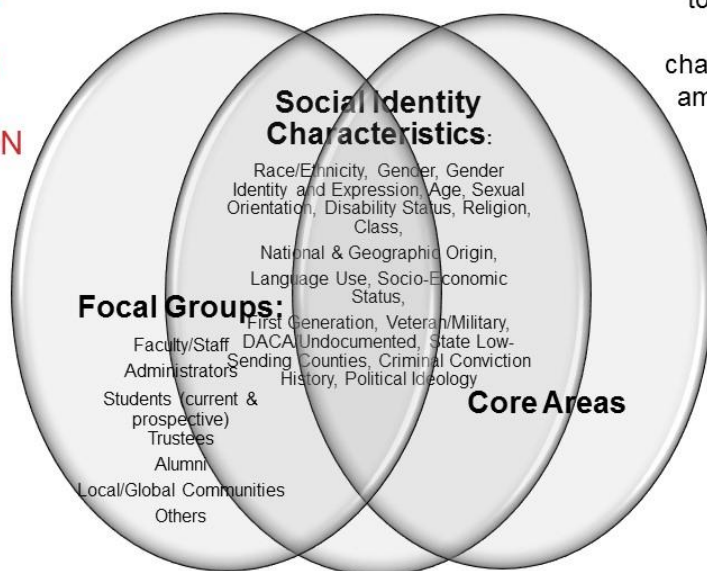


It is important to be explicit at the outset about the community that we want to strengthen.

For inclusion and equity, stakeholders at UNM are in the intersection of the 3 circles in the Venn diagram - intersectionality. Of these groups, we also need to diversify the social identities represented in them. Some of the questions to address this are: Although there are a high number of women, are women of color gaining the same promotional and salary opportunities as white men? What about women with disabilities, single moms, and other differences in the ability of students to respond to these issues. How can we address the concerns?

We need to respond to the unexpected request that marginalized community members are facing, letting them know they are respected and supported. Additionally, we want to promote inclusion in the focal group. Some access points are through the core areas that focuses on families and communities, and not just the individual, a campus climate that is welcoming, a curriculum that teaches us about ourselves as well as to appreciate the cultures of others, instruction that is culturally relevant, procurement practices that encourage use of minority and women owned businesses, advancement that promotes alumni engagement from diverse backgrounds, and accountability that includes metrics to assess diversity performance goals in addition to other measures of institutional effectiveness.

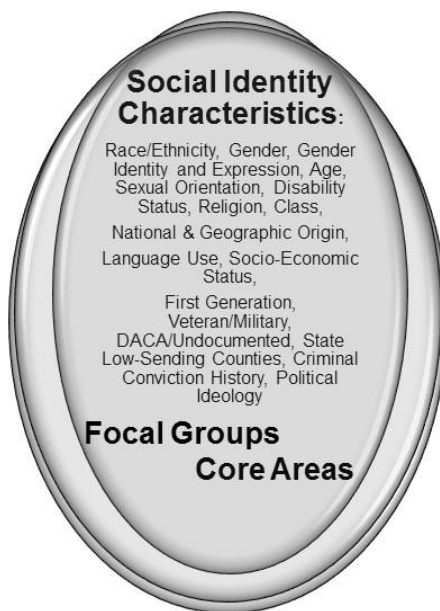
INCLUSION AND EQUITY IN HIGHER EDUCATION



The strategy:
to diversify
social
characteristics
among focal
groups

The strategy is to diversify focal group characteristics with the goal of equity.

DIVERSITY & INCLUSION IN HIGHER EDUCATION: BUILDING A PATHWAY TO EQUITY



**Equity is the
goal:** social
identity
characteristics
are not
determinative
of access to
opportunity &
total inclusion
in regards to
all core areas

We know we arrive there when identity does not determine opportunity.

UNM FIRST TIME FRESHMEN BY GENDER AND RACE: FALL 2018

First Time Freshmen: Fall 2018				Race/Ethnicity
Women (n)	Men (n)	Total (n)	Total %	
801	596	1397	53%	Latina/Latino/Latinx
416	350	766	29%	White
64	46	110	4%	Two or more races
73	56	129	5%	Asian
55	37	92	4%	American Indian
43	32	75	3%	African American/Black
18	33	51	2%	International
5	2	7	0.3%	Native Hawaiian
14	12	26	1%	Unknown
1489	1164	2653	100%	Total: All Race/Ethnicity Groups

Source data courtesy of the University of New Mexico Office of Institutional Analytics

UNM is matriculating women, and Hispanics to the university. Total undergrad enrollment show that 2018 did a good job at recruiting, compared to the overall student population.

TOTAL UNDERGRADUATE ENROLLMENT: FALL 2018 (FULL AND PART TIME STUDENTS)

Race/Ethnicity	First Time Freshmen: Fall 2018	All Undergraduate Students
	Total	Total
Latina/Latino/Latinx	53%	49%
White	29%	32%
Two or more races	4%	3%
Asian	5%	4%
American Indian	4%	6%
African American/Black	3%	2%
International	2%	2%
Native Hawaiian	0.3%	0.2%
Unknown	1%	1%
Total: All Race/Ethnicity Groups	100%	100%

Source data courtesy of the University of New Mexico Office of Institutional Analytics

TOTAL UNDERGRADUATE ENROLLMENT BY COLLEGE/SCHOOL: FALL 2018

Race/Ethnicity	All Undergraduate Students	Total Undergraduate Enrollment, Arts & Sciences	Total Undergraduate Enrollment, Engineering
	Total %	Total %	Total %
Latina/Latino/Latinx	49%	44%	37%
White	32%	36%	35%
Two or more races	3%	3%	3%
Asian	4%	4%	5%
American Indian	6%	4%	4%
African American/Black	2%	2%	1%
International	2%	4%	13%
Native Hawaiian	0.2%	0.2%	0.1%
Unknown	1%	2%	2%
Total: All Race/Ethnicity Groups	100%	100%	100%

Source data courtesy of the University of New Mexico Office of Institutional Analytics

By college and school - white students are overrepresented in A&S and Engineering, with minorities being underrepresented.

UNM MAIN CAMPUS 6-YEAR BACCALAUREATE DEGREE RATES (2018)

Race/Ethnicity	Percentage
Latina/Latino/Latinx	52%
White	59%
Two or more races	58%
Asian	61%
American Indian	29%
African American/Black	47%
International	6%
Native Hawaiian	56%
Unknown	60%
Total: All Race/Ethnicity Groups	54%

Source data courtesy of the University of New Mexico Office of Institutional Analytics

Bachelorette degrees: the majority are completing the degree in 6 years, but fewer are completing among American Indian, African American, and international students. This helps set a landscape of issue to discuss, especially at this colloquium.

WHY DOES DIVERSITY MATTER?

"...June [2014, was] the last school year ever in which a majority of America's K-12 public-school students [were] white."

"...as our society diversifies, broadening the circle of opportunity has become a matter not only of equity but also of competitiveness."

"...minority young people are the nation's future workers, consumers, and taxpayers. If more of them don't obtain the education and training to reach the middle class, the U.S. 'will be a poorer and less competitive society' (Rice University sociologist Steven Murdock

April 25, 2014 edition of NJ Daily. <http://www.nationaljournal.com/political-connections/how-we-re-still-failing-60-years-after-brown-v-board-of-education-20140424>

The National Center for Educational Statistics recently projected that minorities will become a majority of the K-12 public-school student body for the first time in 2014—and that majority will steadily widen. As recently as 1997, whites represented more than three-fifths of public-school students. This transformation isn't just limited to a few immigration hubs: Minorities now represent a majority in 310 of the 500 largest public-school districts, federal statistics show.

WHY DOES DIVERSITY MATTER?

Diversity
benefits
our
teaching
and
research
mission

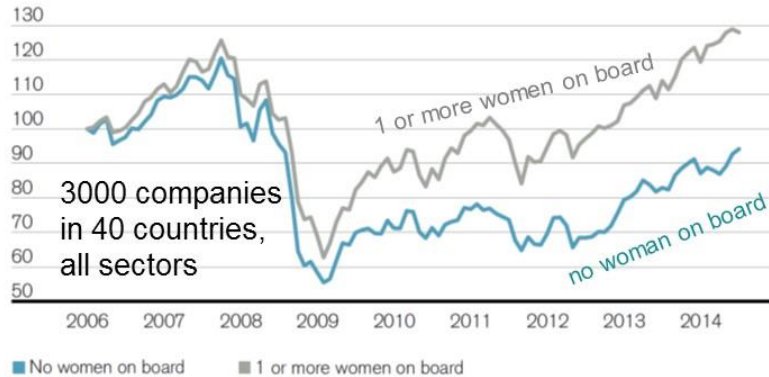
- Diverse working groups more productive, creative, and innovative (e.g., Herring, 2009)
- Ideas generated by diverse groups of higher quality (McLeod et al., 1996)
- Level of critical analysis of decisions and alternatives is higher in groups exposed to minority viewpoints (e.g., Sommers et al., 2006)

DIVERSE GROUPS ARE MORE PRODUCTIVE

From 2006 to August 2014 companies with 1 or more women on the board of directors have outperformed companies without women on the board by 18% in Europe; 20% in the US; and 55% in Asia

Global performance: companies market cap >USD 10 billion

Source: CSG 3000



<https://publications.credit-suisse.com/tasks/render/file/index.cfm?fileid=8128F3C0-99BC-22E6-838E2A5B1E4366DF>

DIVERSITY + INCLUSION = INNOVATION

We want our representation at UNM to reflect the diversity of the communities where we live and work.

Inclusion: We want people to feel that they belong and are respected, that they bring value and are encouraged to thrive.



Diversity doesn't work without inclusion, and vice versa.

DIVERSITY + INCLUSION = INNOVATION

Current theory says that diversity that is beneficial to organizations requires inclusion, equity, and access. Citing human resource management literature, the Society for Women Engineers (SWE) argues that diversity and inclusion are synergistic. Diversity does not work without inclusion (and vice versa).



DIVERSITY + INCLUSION = INNOVATION

- Decision-making improves when teams embrace:
 - different points of view,
 - independence of thought, and
 - the sharing of specialized knowledge.
- Diverse groups almost always do better on sophisticated problem solving tasks than homogenous groups because accommodating different experiences breaks down the risk of groupthink.
- Workgroups that make the time to openly discuss conflict and that want to learn from all perspectives can reap the greatest benefits of diversity through the development of an inclusive culture.



DIVERSITY + INCLUSION = INNOVATION

- Educational institutions suffer turnover, missed opportunities, and low morale when they lose someone's contribution because they feel they don't belong.
- Overlooking and underutilizing the full potential of students & employees . . . happens when unconscious bias is at play.
- At their best, diversity and inclusion efforts work together to cultivate an empathetic understanding in leaders and colleagues that allows them to value each other as individuals and as whole people (Society for Women Engineers and ARUP [a London- based engineering firm] 2014).



DIVERSITY + INCLUSION = INNOVATION

A controlled experimental study of performance during a brainstorming session compared ideas generated by ethnically diverse groups composed of Asians, Blacks, Whites, and Latinos to those generated by ethnically homogeneous groups composed of Whites only. Evaluators who were unaware of the source of the ideas found no significant difference in the number of ideas generated by the two types of groups. However, when applying measures of feasibility and effectiveness, they rated the ideas generated by diverse groups as being of higher quality.⁴

A national longitudinal study of 25,000 undergraduates at 217 four-year colleges and universities showed that institutional policies fostering diversity of the campus community had positive effects on students' cognitive development, satisfaction with the college experience, and leadership abilities. These policies encouraged faculty to include themes relating to diversity in their research and teaching, and provided students with opportunities to confront racial and multicultural issues in the classroom and in extracurricular settings.¹⁰

BUILDING FACULTY/INSTRUCTOR COMPETENCIES

Faculty-capacity approaches are crucial to increasing the likelihood of better student outcomes.

I would like to work with our faculty to create and evaluate systems-thinking professional development practices to address educational outcome inequities (Kraemer & Gillian-Daniel 2015; Schmid, Gillian-Daniel, Kraemer & Kueppers 2016).

Founded on an understanding of the importance of instructors' multicultural responsiveness (Bensimon 2007), the literature shows that systems thinking can help us to "identify, and ultimately re-design the systems that lead to poor, inadequate, and unjust outcomes" among students of color (Kraemer and Gillian-Daniel 2018).



BUILDING FACULTY/INSTRUCTOR COMPETENCIES

They utilized a systems-thinking approach to a faculty and course instructor development and training program at the University of Wisconsin-Madison (UWM), to build faculty members' capacity to close opportunity gaps in STEM classes.

At UNM, we may find it useful to encourage faculty to complete evidence-based training to address issues of implicit bias and to understand systematic cumulative disadvantages encountered by some of our students (Solorzano 1998; Harwood et al. 2015).

It may be helpful to educate faculty about benefits of diversity for innovative thinking (Herring 2009; Herring and Henderson 2014; McLeod et al. 1996; Sommers et al. 2006; Society for Women Engineers [SWE] and ARUP 2014).



BUILDING FACULTY/INSTRUCTOR COMPETENCIES

We could further promote behavioral strategies to address bias, including counterstereotypic imaging (Carnes et al. 2015; Jackson et al, 2014; Rudman et al, 2001), exposure to exemplars in leadership positions (Dasgupta and Asgari 2004), and teaching methods aimed at reducing stereotype threat and increasing interest and efficacy (Hillard et al. 2012).

Addressing teaching challenges could entail encouraging faculty to follow effective practices to impact class structure, including “research-proven practices that are shown to positively impact opportunity gaps, such as active learning, group-based learning, creating supportive learning environments, and providing inclusive examples of diversity that are embedded in course content” (NASEM 2018).



BUILDING FACULTY/INSTRUCTOR COMPETENCIES

Finally, as shown by the UWM example, it will be important to leverage the various levels of the university infrastructure to build the capacity of the instructor and ultimately change and improve the learning environment of courses offered within STEM curricula.

It would be wonderful to partner with CTL, our resident experts to promote cultural humility and sensitivity among our faculty.



STUDENT-CENTERED APPROACHES ARE KEY

Cross et al. (2014 and 2018a, b, c, d, e) emphasize the importance of attending to students holistically, including:

- honoring their varied cultural backgrounds and
- supporting their mental health (Evans et al 2018: 282).

In sum, inclusive practices are incomplete if we expect to bring students to UNM and then ask them to simply assimilate.

To be truly inclusive, and to ensure that we enjoy the intellectual benefits of diversity (SWE ARUP 2014), we must ultimately expand disciplinary canons to incorporate the interests and epistemologies of budding scholars from the many communities, both domestic and international, represented within our student body.



CONCLUSION

Thank you for the opportunity to share DEI plans as well as the empirical bases from which we propose these strategies.

We look forward to partnering with you over the next several months and years to “Get at the Gap” (as is the theme for today’s colloquium) and to build a better learning environment for URM undergraduate students in STEM.

Inclusion today is the key to innovation tomorrow. Our efforts will help us to produce graduates who will become leaders in the work force and enhance both diversity and inclusion of their respective fields.



ACKNOWLEDGEMENTS & CREDITS

Special appreciation to [WISELI](#): Women in Science & Engineering Leadership Institute, University of Wisconsin

- This presentation drew upon brochures prepared by Eve Fine and Jo Handelsman
- Benefits and Challenges of Diversity in Academic Settings

NSF funded [ADVANCE](#) Center for Institutional Change, University of Washington for slides/resources

A full reference list to publications cited in this presentation is available upon request

[University of Illinois DRIVE](#) committee and work of co-chair Professor Wendy Heller and grad assistant Jacqueline Yi

DiversityEdu implicit bias awareness search committee training curriculum

Erin McConahey, ARUP Fellow's presentation, "Give Me the Data: talking about unconscious bias", University of Illinois, March 5-6, 2015

Assata Zerai's *Intersectionality in Intentional Communities* (2016) and Zerai's and colleagues' NSF: IGE proposal entitled *Science for All* (2018)

THANK YOU!



DIVISION
FOR EQUITY
& INCLUSION



Move beyond a conversation!

Ask questions, participate in discussions, and exchange ideas!

Discussion:

Question: How are you checking to see if the curriculum is diverse and inclusive. Even if something is written into a syllabus, the actual implementation is not always seen.

Answer: I am new to UNM, but we will partner with CTL because I don't have much info on that. We want to send out a climate survey next year and include a racial microaggressions portion where we oversample students of color and those that are most marginalized, to get a sense of their classroom experience. I want to develop an education curriculum for our faculty for implementation as a result of the survey.

Question: I am interested in understanding how Latino students are doing on our campus. It seems as if Hispanic students are doing well, especially women, but when we look at incoming vs retention, the numbers are not great. The number of students who exit successfully is not good. I want to hear more about truly understanding that data in the 4/5/6 year graduation rate.

Answer: It will be important to partner with student support colleagues and ethnic centers to think through the issues keeping them from graduating. I have begun to understand a major player are financial concerns. We have a strong profile of students who come in, so all of them have the capability to finish. But, they don't always have the necessary support to do it. Better funding to Ethnic centers could help, allowing them to have a place to be, a positive impact on graduation rates. Other institutions have shown that result. Student success needs to partner with ethnic centers. More financial aid to students will be important as well.

Question: From SIPI representative - Alfonso, Math Instructor - I wanted to thank you for what you are trying to do and I want to work more closely to see what can be done as a joint effort. We [New Mexico] are one of the states who serve minorities. Nationally, we are doing great! We have that opportunity.

Answer: We can think about pipeline programs. The Alfred P Slone foundation provides funding for American Indian students and programs for these students. Not just into Baccalaureate programs, but also masters and PhD. If we can work together to apply for that funding, we can provide more support. Pamela Agoyo with

American Indian Student Services is doing a great job at AISS for intrusive advising to make sure we can help students meet their benchmarks.



Did not have access to STEM-related honors and AP courses in HS.



Switched majors after starting out in a STEM program.



Selected a summer 'job' over a research / internship opp.



Felt like you were putting on a show or a fraud

Quick show of hands!

How many of you either experienced this or know somebody who has?

Jose: I am a 1st generation low income student from Grants. I am now proud of that. I was afraid of letting people know this growing up. I felt like an impostor. So I make sure to say that now any time I have a mic.



Undergraduate STEM Student Perspective

Student Panel:

Michael Salazar: Biology student, focus in conservation of insects and other arthropods.

Anton Perez: Film, Digital media arts students.

Arely Ortega: Pre-nursing with a focus in biology.

From Jose's experience - when asked what I wanted to major in, my parents exposed me to a narrow list of options, because of their knowledge limitations. So the question is: What were your interest and what were your plans when you first started here at UNM, and how has that shifted.

Michael - My interest started in elementary school. I always loved learning about animals. I read through biology books because I love learning about how nature behaves, and everything about animals - how they worked around the challenges they faced. My interest has remained the same. Now I see their environments are as fragile as they are and need protecting.

Anton - I started with an interest in computers and computer programing, so I started in computer engineering courses. My major now is application game design which is more in line with what I want to do.

Arely - I had no interest in STEM until my senior year in high school. I fell into emergency medicine. I wanted to do more than Emergency Medicine, so I went the path of nursing to give back to the community.

Question: Anton - you started in STEM, so what caused you to leave the STEM field.

Answer: I started in computer engineering to learn the programming of the computers. My interest is in game design, which I realized was better served with a degree in digital media. So, the field switch is more applicable moving forward.

Follow up question: You didn't leave from an issue with the STEM fields?

Answer: No, it was because of the closer connection to my career choice.

Question: How did you feel your interest in high school were supported in your bridge to UNM?

Answer: Arely - all my friends had what they wanted written out on a mood board. But, they pick different things than what they wanted growing up. A lot was exposure in classes and have somebody push you to look into other options. My STEM intro was because somebody sparked that interest in me.

Anton - I saw a lot of peers know what they wanted to do. I knew I had an interest in computers. At UNM I learned more about course offerings, thus I made the switch.

Michael - I always had an interest in biology, My biology professor in HS was an actual professor that had taught at institutions and did other bio work with anatomy. So when I learned from him and spoke with him, it was a great experience because he knew about his subject. He could explain in it many different ways until you understood it. He made it fun so it stuck with you, and walk you through it so you could really understand it. That shaped who I was because I wanted to use that same type of knowledge to contribute to my community.

Question: It seemed like there was a pivotal moment early on that peaked your interest. Did you participate in any university outreach programs before entering UNM?

Answer: Arely - only when I became a senior when I worked on getting my emergency medicine licensure and college credit at a younger age.

Anton - I took dual credit courses in HS to earn an associate's degree.

Michael - Dual credit courses because my HS was an early college HS.

Question: What was your largest challenge to adjusting your 1st semester?

Anton - the extra time without somebody pushing you through it. I am a 1st generation student, so I had to navigate that alone.

Arely - leaving HS my courses were in the morning and then doing licensure in the afternoon. I didn't have the support system I needed. I floundered hard that 1st semester, but found resources to help push me through my 2nd semester. I am not a 1st gen student and came from pushing, but it was the resources on campus that made a difference.

Michael - I didn't ask for help when I needed it. In HS it was easier for me, so what I could do, I did on my own. There is a step up in UG in difficulty, so I needed extra help. I was in the mindset of trying to do it myself before asking for help. I am now more prepared.

Jose - as a society we don't like asking for help. But, in reality, we all have questions.

Question: Matt Suazo - I mention services when I can. What support services did you find out about, how did you find out, and what can we do to get the info out there?

Answer: Michael - it is well done because the organizations are saying they are there to help. It is the mentality that holds us back. The groups are doing good at making it known they are available and easily ready for us. It is more of a societal problem of being alone or it doesn't mean anything.

Anton - getting services like CAPS out to students, I know they are there, but don't know what they do for you or how to use them. Perhaps getting info on specifics of what they can do.

Arely - I would walk straight past all the welcome back tables. But thankfully for NSO, we got dragged through all the support offices. One day the Raza event happened and I decided to just go. It didn't stick right away, but I met somebody at the Raza Junta that told me to go to the next event. So my 2nd semester it was impossible to ignore those bonds that I made, and that support for seeing me succeed. Now I spend the time there as a safe place to do things. That is what helps me get through.

Question: What are some of the challenges you have faced here at the university?

Answer: Arely - 2 title 9 situations, lost all my scholarships and FASFA, but walking through el Centro and Lobo Respect and asking for help got me through. I lost all opportunities I had going to school, but made it through. I am pushing to graduate in a few years.

Anton - it is easy to waste the extra time and flounder. I am working at getting my scholarships back. Finding the balance between network and social life, getting work done, and but a balanced life.

Michael - asking for help from the organizations. But also applying my knowledge. I could take a quiz blindfolded, but other times it was hard for me and I didn't know what I was looking at. The biggest problem there was getting overwhelmed and not seeing what you have in front of you and what you have to focus on.

Comment: Thank you for sharing your stories. Your stories are similar to mine. I was a 1st generation with 10 years for an AA. but once I was on a path, I got through, now to a Doctorate degree. I am a student success coordinator for nursing. I am happy to hear that stem and nursing have a place for both. I am not in administration, but it is not clear how nursing fits within STEM. I am excited to see a student using both.

Question: What was your favorite class at UNM and why?

Answer: Arely - Intro to EMS. The way the medical professions handle things is not teach from a book. They told me about their time in the field. A personal connection to the instructors. I am biased because the parametric is a person who picked me up when I was having my own personal medical emergency. Seeing that person in class is what made me want to do medicine. Being a student under him I would not trade for the world.

Anton - the 1st film course was with Dr. Ziney [unverified spelling] - it cemented in my mind it was what I wanted to do because of his passion and creativity. It helped me be confident in the path I have chosen.

Michael - chem 121 and lab because it teaches you the basics of the elements - how they interact and behave, but the lab helps you see it actually happen. It is not just an equation, you can see what actually works in real life and in real time.

Question: I teach Math. When a student comes to me to say they are not good in math, they are bad in math, I say they are not bad. You care not bad, you have a bad experience. Sometimes you relate an area or topic to the teacher. If you have a bad experience, you associate them together. You spoke of not your favorite class, but your favorite teacher. The person who motivated you to go farther. In HS, my biology professor was really good and I wanted to do that. Being Latino - a good teacher can change your life. Sometimes the teacher is more important than the content. Was the good teacher more important than the content, or do you think beyond that to know what you want to do?

Answer: Michael - If it wasn't for the teacher student relationship, you are just sitting with friends. But, it was my HS teachers - there were only 10 of us, so that closer relationship helped me. Seeing how passionate he was about teaching the content, sharing that knowledge. That stuck with me. I wanted to get that same level of excitement for what I chose to do. Anton - having a professor always had a lot. A lot of the courses are standardized, so having a teacher that knows how to convey the info is really helpful. Even with interesting content, the class will not be a good experience. The good professor that is excited is the turning point. I already have a base interest in the content, so it is the professor.

Arely - there have been courses I see and enjoy. I agree that an instructor makes a world of a difference on how you absorb the material. It is also about getting the right peers. I understand that now. It is hard to pick a favorite class as a pre-nursing student because I haven't gotten into the courses that focus on what I want to do for my life. That is why the EMS course helped hit home.

Question: What is 1 thing you would recommend that would make a student like you have a better transition to the university?

Answer: Arely - seeing all the women in this room is wonderful. And, a lot of women seeming interest in trying to push to close the gap, not just for women, but also all minorities. UNM has a special way of reaching to every person. We are already taking those steps to reaching out to those who don't, help is there.

Anton - A student group on campus that helps raise awareness to faculty of student experiences (i.e. Dream Zone) and will help you reach and connect with students that have unique experiences.

Michael - the representation plays a big part. Seeing other people like you in the field, in a professional setting in general. Finding a "like" person helps. UNM does a good job at being friendly. They are opening and welcoming to the students and any issues you are having.



Major Changes!

Students apply to UNM in HS and ~40% of students change their major before or at NSO.



I want to be a doctor!

Students are unaware of ALL the different possibilities available to them or the steps to get there.



I'm not going to graduate in 4 years!

Students change their major based on their time to completion and pre-requisites.



Classes only on T/TR, please!

Students are busy and have many commitments at home, work, etc.

What happens during NSO?

UNM's STEM Student Murky Middle



2019 STEM Cultural Colloquium Getting at the Gap

**Yadéeh Sawyer,
PhD**

*STEM Collaborative Center,
UNM*

UNM's STEM Student Murky Middle

Yadéeh Sawyer, PhD

University of New Mexico

STEM Collaborative Center & Engineering Student Success Center

With Tim Schroeder, Ed.D. and Mónica Jenrette, BBA



I won't have conclusions at the end of this presentation because this is preliminary data that we want your input on so we best address the concerns and questions that will best serve the UNM community.



The Achievement Gap

Within higher education, we hear a lot about the ‘achievement gap,’ especially for underrepresented groups. And, this effect is enhanced within Science, Technology, Engineering, and Math (STEM) fields specifically

1503 First time full-time freshman from the fall of 2005, 2006, and 2007 were tracked in this study.

Students initially stated that they were interested in STEM degrees



29.6%



42.5%



22.2%

5.7% Still enrolled



The Status of STEM at UNM

Let's put this into perspective for students at UNM. A STEM grant before us, STEM Gateway, looked at data related to STEM persistence at UNM. The majority of students are switching out of STEM, with those in underrepresented demographics having the lowest graduation rate within STEM fields. That led us, with the STEM Collaborative to look into which students were the most vulnerable to underperform.

UNM's STEM Student Murky Middle

- 3365 first-time, full-time freshmen students who entered UNM's Main Campus in Fall 2016 through their fourth semester (Spring 2018).

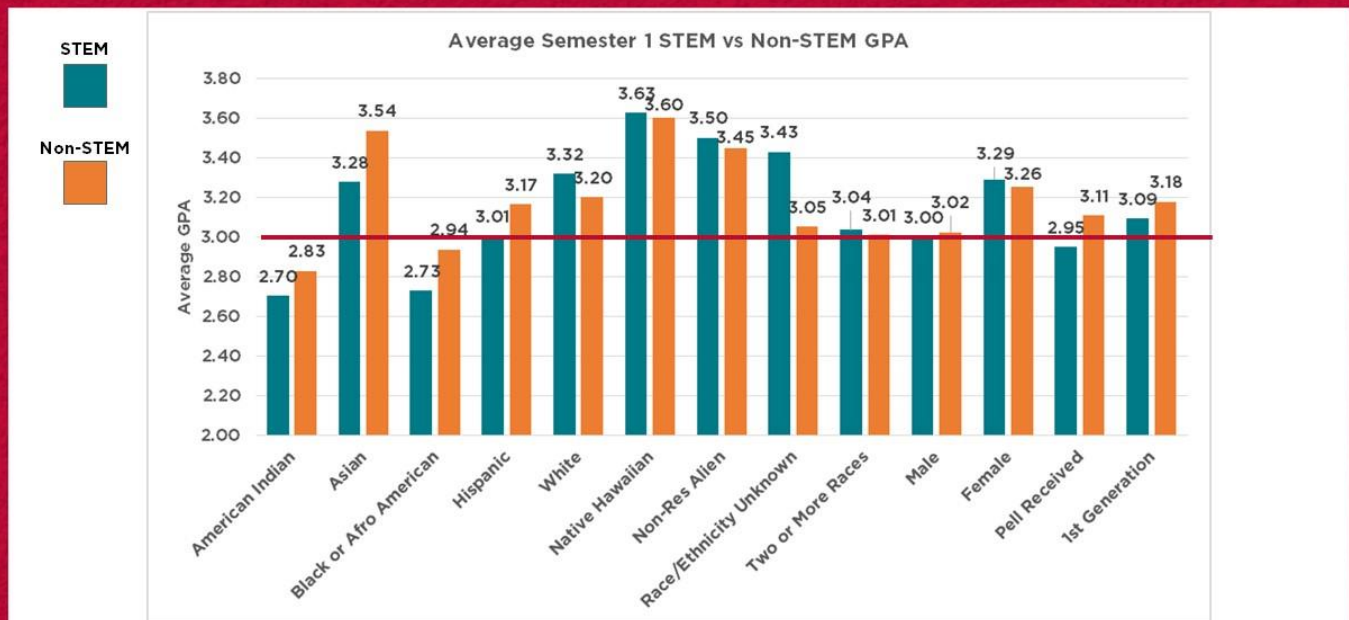
- **Narrow definition of STEM:**

Astrophysics	Computer Science	Mathematics
Biochemistry	Construction Engineering	Mechanical Engineering
Biology	Construction Management	Nuclear Engineering
Chemical Engineering	Earth & Planetary Sciences	Physics
Chemistry	Electrical Engineering	Statistics
Civil Engineering	Environmental Science	
Computer Engineering	General Engineering	



Data Constraints

For this research, we pulled data on the more than 3000 1st time, full time freshmen students who entered UNM's Main campus in Fall of 2016 and followed them through their 4th semester. We then assigned students to a GPA group, based on their 1st semester major and GPA. We define STEM with a narrow definition of STEM.



1st Semester GPA

We started with looking at Average 1st semester GPAs for STEM vs Non-STEM students, by Ethnicity, Gender, and Socioeconomic status.




American Indians and Black or Afro Americans have an average 1st semester GPA below 3.0 for both STEM and Non-STEM Majors, with Pell Received STEM majors also below the 3.0 mark, but non-STEM above it.


The largest discrepancy between STEM and non-STEM are seen with STEM Asian, Black or Afro American and Hispanic, as well as Pell Received, all well below non-STEM. But generally non-STEM outperforms STEM, with the exception of...

STEM Race or Ethnicity Unknown outperforming non-STEM.

And a last point to note are that Males in both STEM and non-STEM are comparable, as are Females, but Females outperform males after their first semester. So what else can we learn from this dataset?

- Low GPA (<2)
- High GPA (>3.0)
- The Murky Middle GPA (2.0 – 2.99)





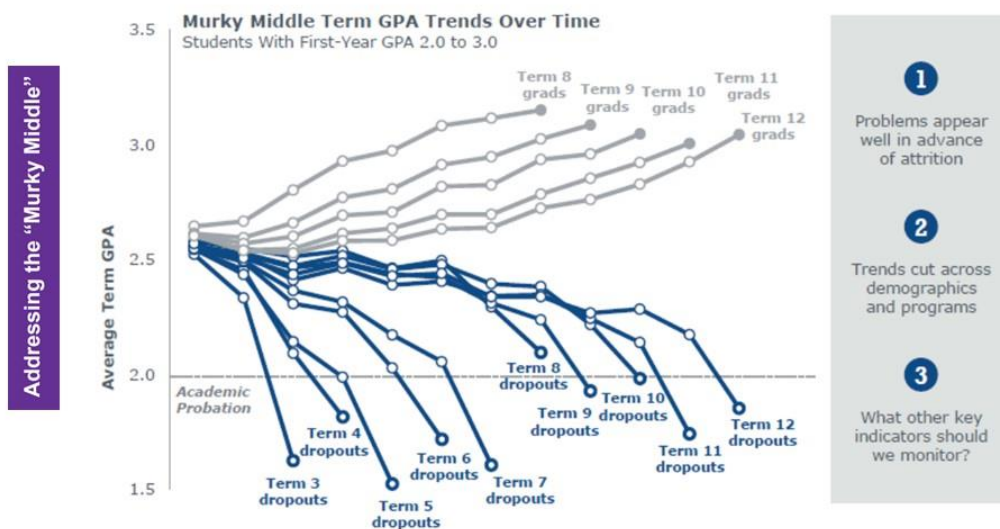
The Murky Middle

Let's take a step back. Within university settings, low performing students raise a red flag and receive intervention support, like holds on their registration.

High performing students gain access to opportunities like scholarships and internships.

However, the students with mediocre GPA after their first year, 2.0 – 2.99, get little attention. This leads to the question of should these “invisible” students be the focus of future retention and intervention efforts. These are the students that have the potential to succeed if given the right opportunities and interventions, or to struggle as a result of neglect.

Murky Middle GPA Trends Foreshadow Departure Several Terms in Advance



The Murky Middle

There are only a handful of studies out there that look at the Murky Middle as a way of improving retention. And, Western Carolina University found that GPA trends foreshadow departure several terms in advance.

But again, what does this mean for UNM? And, more specifically, us being a grant focused on STEM, how do UNM STEM students fair compare to non-STEM students.

UNM's STEM Student Murky Middle

	STEM Majors				non-STEM Majors			
1 st sem. GPA	Low	MM	High	All	Low	MM	High	All
# of students	111	229	738	1078	215	454	1618	2287

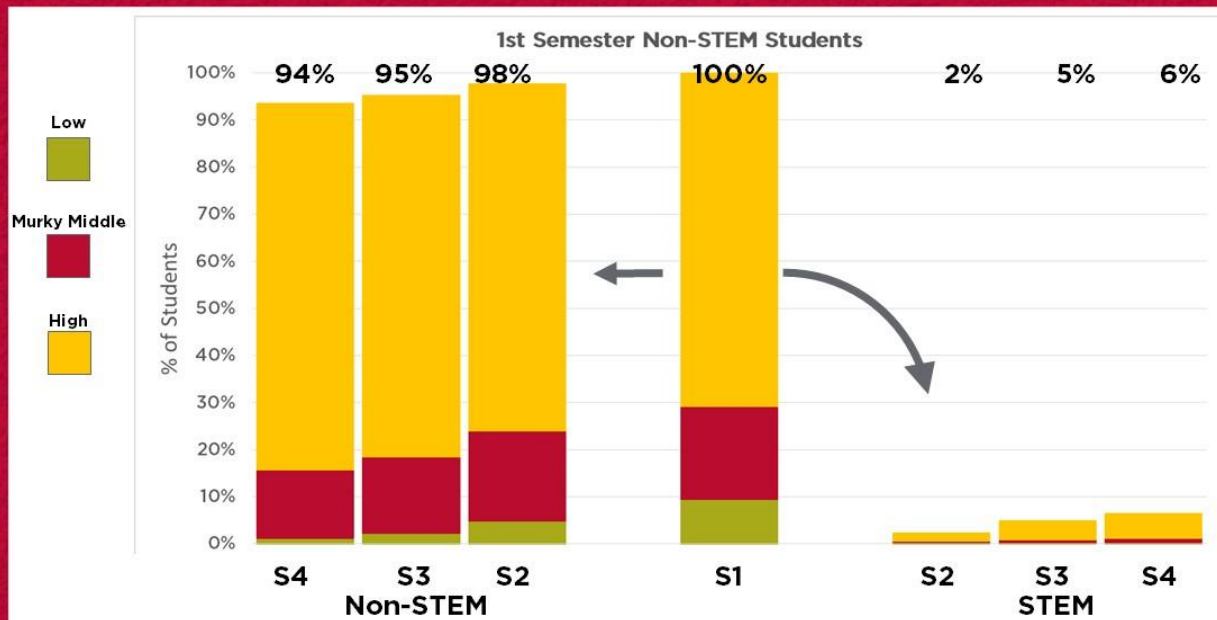
	STEM Majors (32%)			non-STEM Majors (68%)		
1 st sem. GPA	Low	MM	High	Low	MM	High
% of students	10%	21%	68%	9%	20%	71%



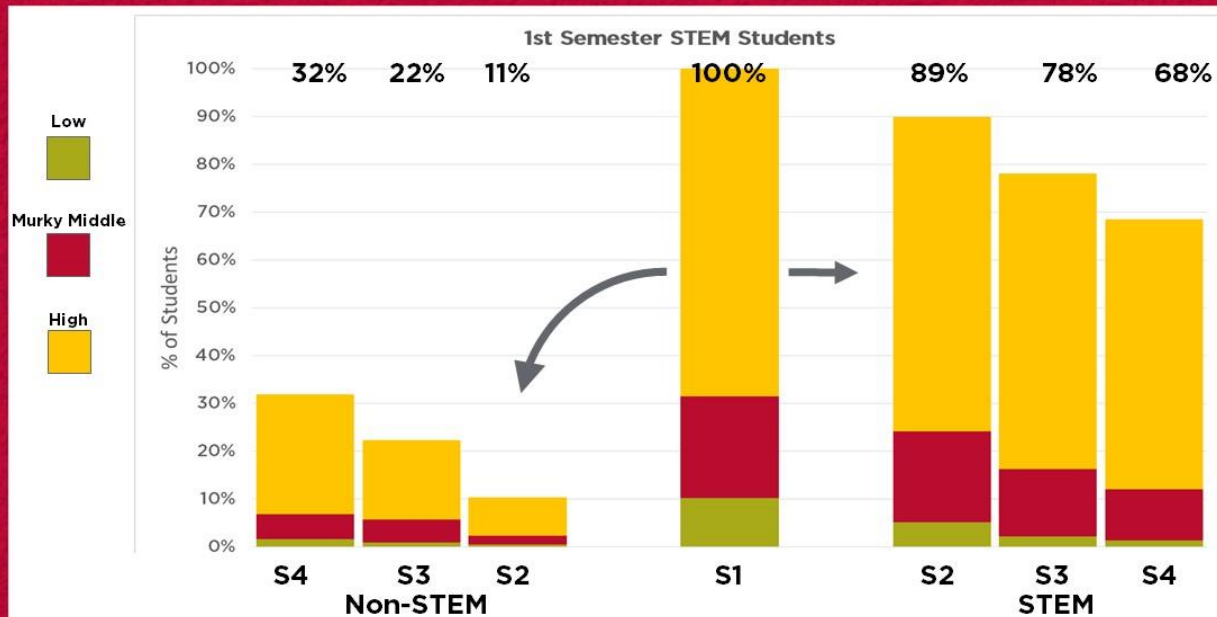
The Data Set

So, from our Fall 2016 cohort, 32% of the students are STEM majors 68% are not. And, of those 1078 STEM students, 68% have high GPA's, 10% low, and 21% fell within the Murky Middle.

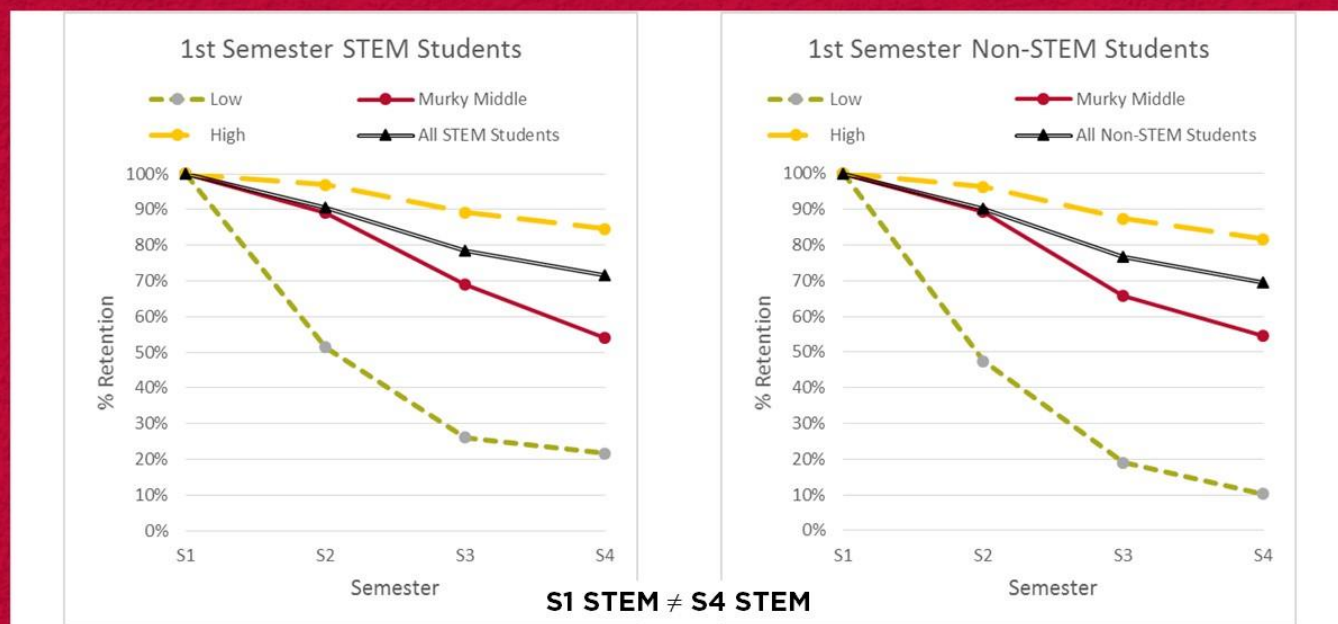
Thinking back to the work done by STEM Gateway, we started delving into the Murky Middle by looking at when students switch out of STEM.



For the students who initially identified as non-STEM, by Semester 2, 98% of enrolled students were still in non-STEM majors, while 2% switched to STEM fields. By semester 3, 5% of enrolled students had switched to STEM fields, and by the 4th semester, 6% had.



This is compared to students who initially identified as STEM majors. By the second semester, 11% had switched out of STEM, and this number grew to 22% by semester 3, and up to 32% by semester 4. So, we can see that STEM majors are more likely to switch out of STEM, rather than the other way around. But, what about retention?



There is a larger decline in enrollment for low GPA non-STEM majors, but otherwise there is little noticeable difference in retention between STEM and non-STEM majors.

We see the largest drop in enrolment for low GPA groups after the 1st semester, where Middle and High GPA groups see the steepest decline after the 2nd semester.

By the 4th semester, we can see we only retain about 15% of low GPA students, with STEM retention surpassing non-STEM.

55% of Murky Middle, and that is about equal in STEM vs Non-STEM groups, while over 80% of the High GPA students are retained, and a slightly higher retention within STEM in the high GPA category.

One thing to keep in mind, though, is that the retention is of the students who were first identified into each group, not where they are by the 4th semester. So, for the higher retention rates within STEM, that does not reflect retention into STEM, but rather that the 1st Semester STEM student is retained at the university.

1st Semester:

- **35% Biology**
- **14% Mechanical Engineering**
- **11% Biochemistry**

Low only

- Construction Mgmt
- Civil Engineering

High only

- Biochem
- Chem Eng
- Env Sci
- Physics
- Stats

- Nuclear Engineering spread evenly
- >30% MM: Nuclear Eng., Astrophysics, Computer Eng, Computer Sci, and E&PS.
- All others: Majority in High GPA group

4th Semester:

- **32% Biology**
- **13% Biochemistry**
- **12% Mechanical Engineering**

• Retention by GPA group:

Low
9%

MM
39%

High
60%

• Switch into STEM:

- **38% Biology**
- **7% Biochemistry**
- **7% Mechanical Engineering**
- **7% Computer Science**



Chosen Major

Of all 1st Semester STEM Majors, 35% are interested in biology, followed by 14% for Mechanical Engineering, and 11% for Biochemistry. All other majors had less than 11%.

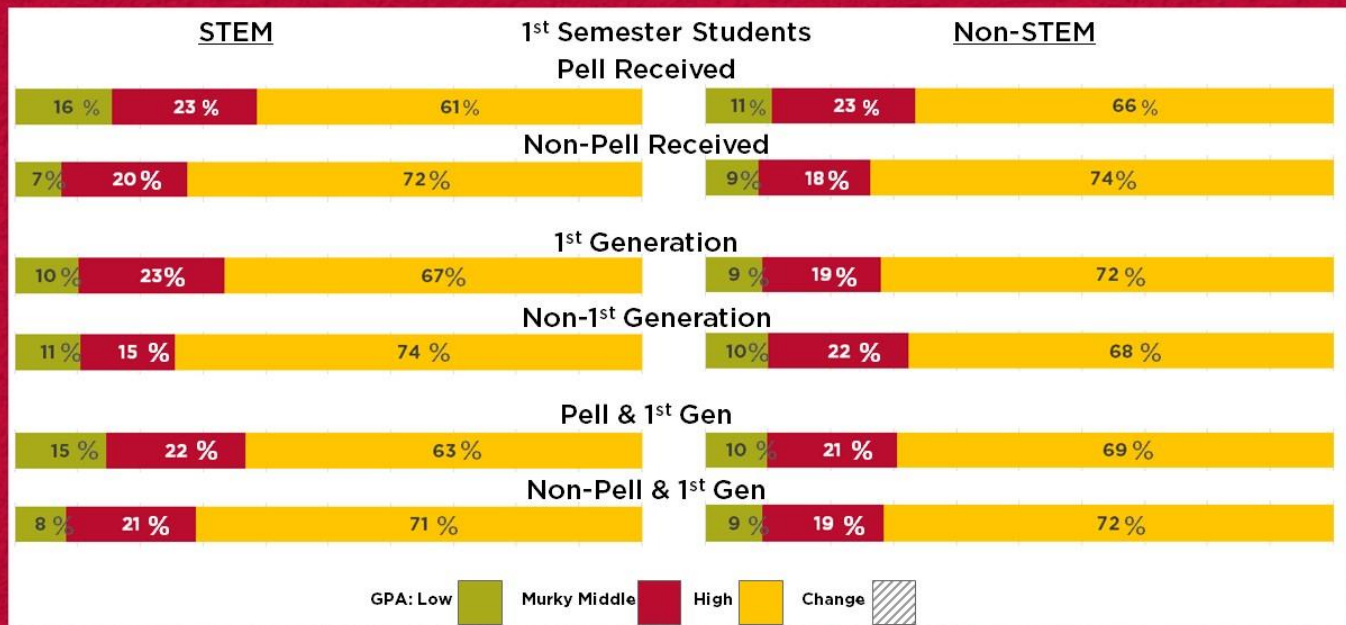
At the end of the 1st semester, all Construction management and civil engineering students had low GPA's, and all Biochemistry, chemical engineering, environmental science, Physics, and Statistics majors had high GPA's.

Nuclear engineering were evenly distributed across all GPA groups, including more than 30% in the Murky Middle. Also in the great than 30% in the Murky Middle majors were astrophysics, computer engineering, computer science, Earth and Planetary Science. All other majors had the majority in the High GPA group.

By the 4th Semester, 32% of all STEM majors were Biology, 13% Biochemistry, 12% Mechanical Engineering. And, as before, all other majors had less than 11%.

When we looked at retention within each GPA group, we found that only 9% of 1st Semester Low GPA STEM students remained, compared to 39% of Murky Middle students, and 60% of the GPA cohort.

Of the students that switched into STEM fields from non-STEM fields, 38% were into Biology (and 7% into Biochemistry, Mechanical Engineering, and Computer Science. The remaining students were spread across the other STEM majors.

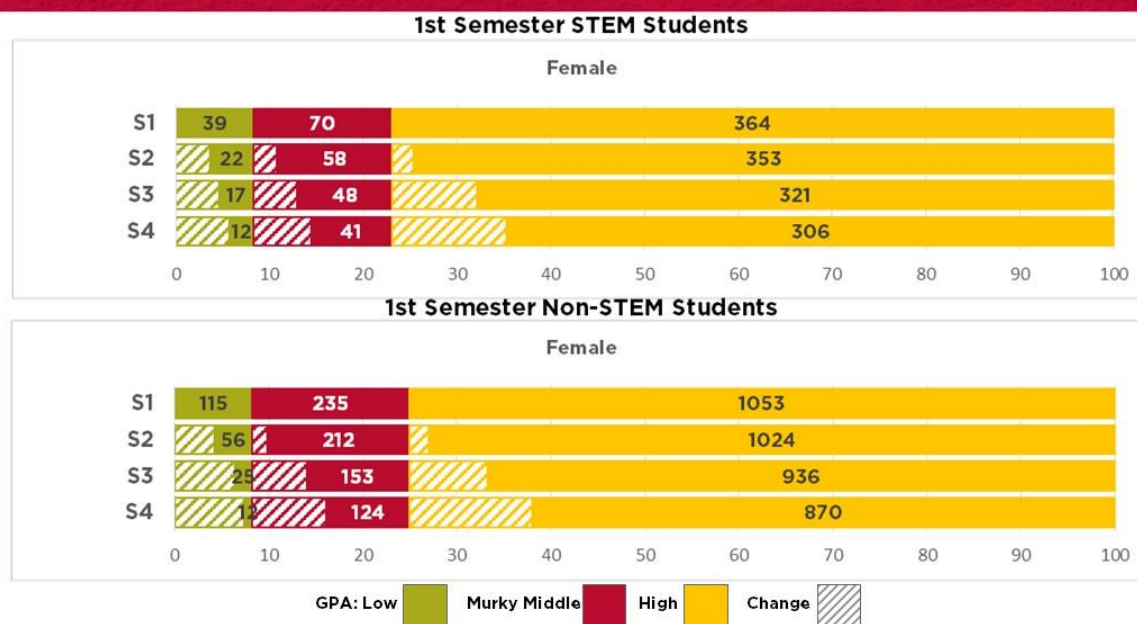


Looking at 1st semester GPA groups, we found that Pell received students were about equal in their performance distribution, regardless of if they were STEM or non-STEM, with 23% in the Murky Middle, and the majority in the High GPA group.

When compared to non-Pell received students. Non-Pell students had a smaller percentage of students in the Low GPA and Murky Middle GPA groups, and over 70% in the High GPA group.

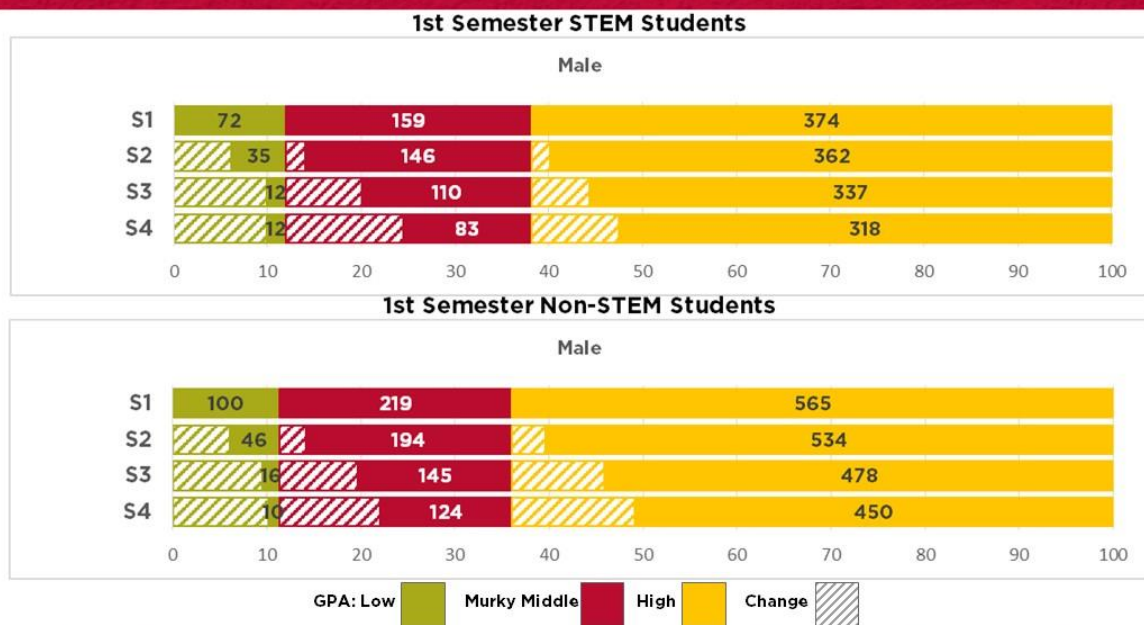
This general distribution is seen again for 1st Generation students – STEM and Non-STEM being comparable, and Non-1st Generation performing slightly higher than 1st gen students.

When we looked at students who were both Pell Received and 1st Generation, the same general distribution presented itself, with again, Non Pell-1st Gen having over 70% of the students in the High GPA category at the end of the 1st semester.

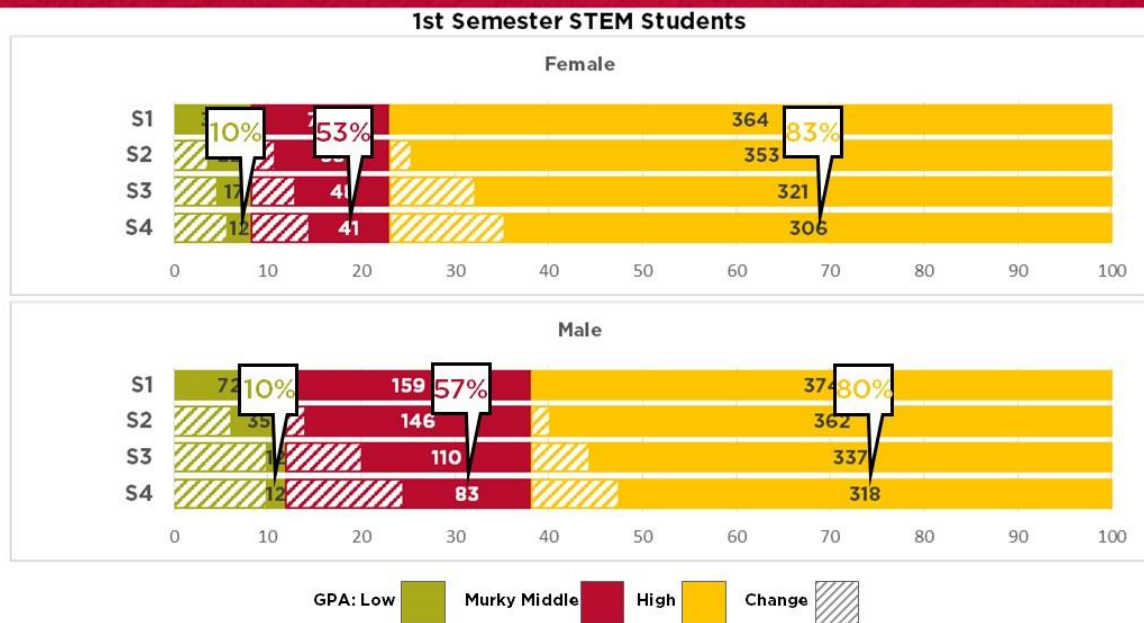


For the following graphs, you will see consecutive semesters. The later semesters are based on the group assigned during the 1st semester, so we are not able to see if, for example, the 306 high performing females in STEM for the 4th semester are still in a STEM major, or if they changed their GPA group, just that they are still enrolled at the university.

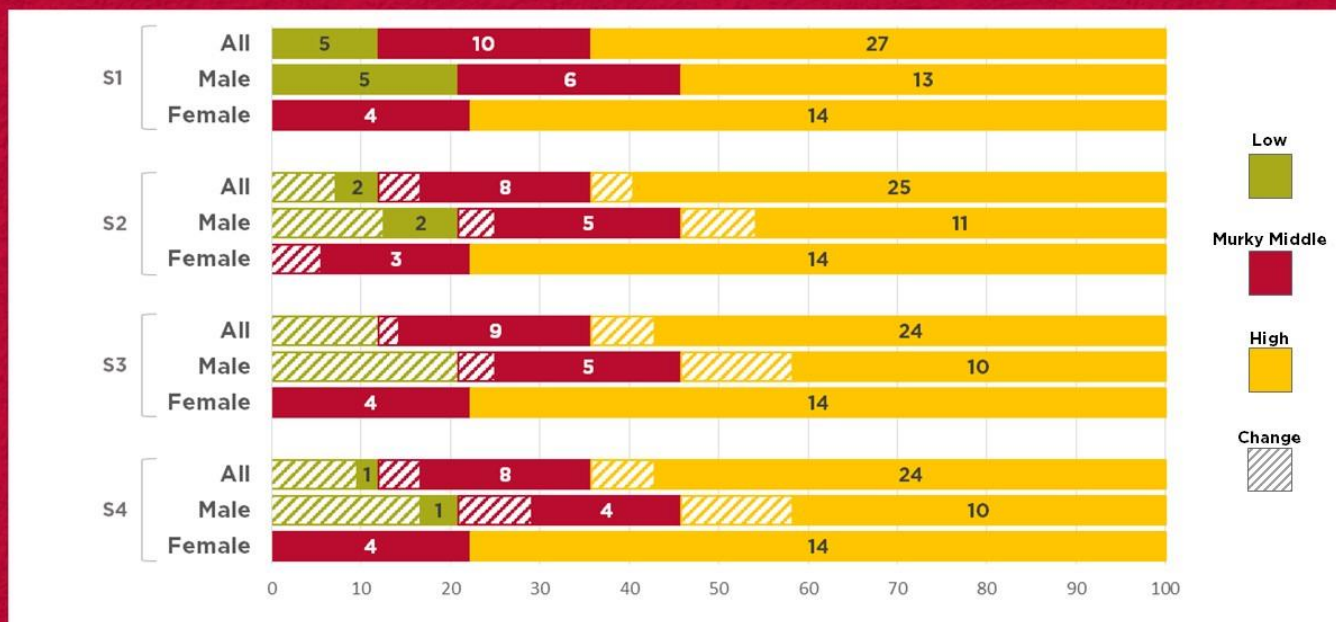
The values listed on each bar are the number of students, where the percentage is the size of the bar. We see that a little less than 10% of both STEM and non-STEM females were in the Low GPA group after their first semester, and by the 4th semester, only a small portion of these students were still enrolled at UNM. And, performance distribution between STEM and non-STEM are about the same.



For males, a little over 10% of both STEM and non-STEM students were in the Low GPA group, and again, performance distribution between STEM and non-STEM are about the same.



But, what is noticeable is when we look at females compared to males. There is a higher percentage of Females in the High GPA group after the 1st semester compared to males. And when we look at retention of these students to the 4th semester, again, not necessarily within a STEM major, but at the university, there are slightly more males from the Murky Middle, and Females from the High GPA groups retained, but overall, percent retention is about equal between genders.

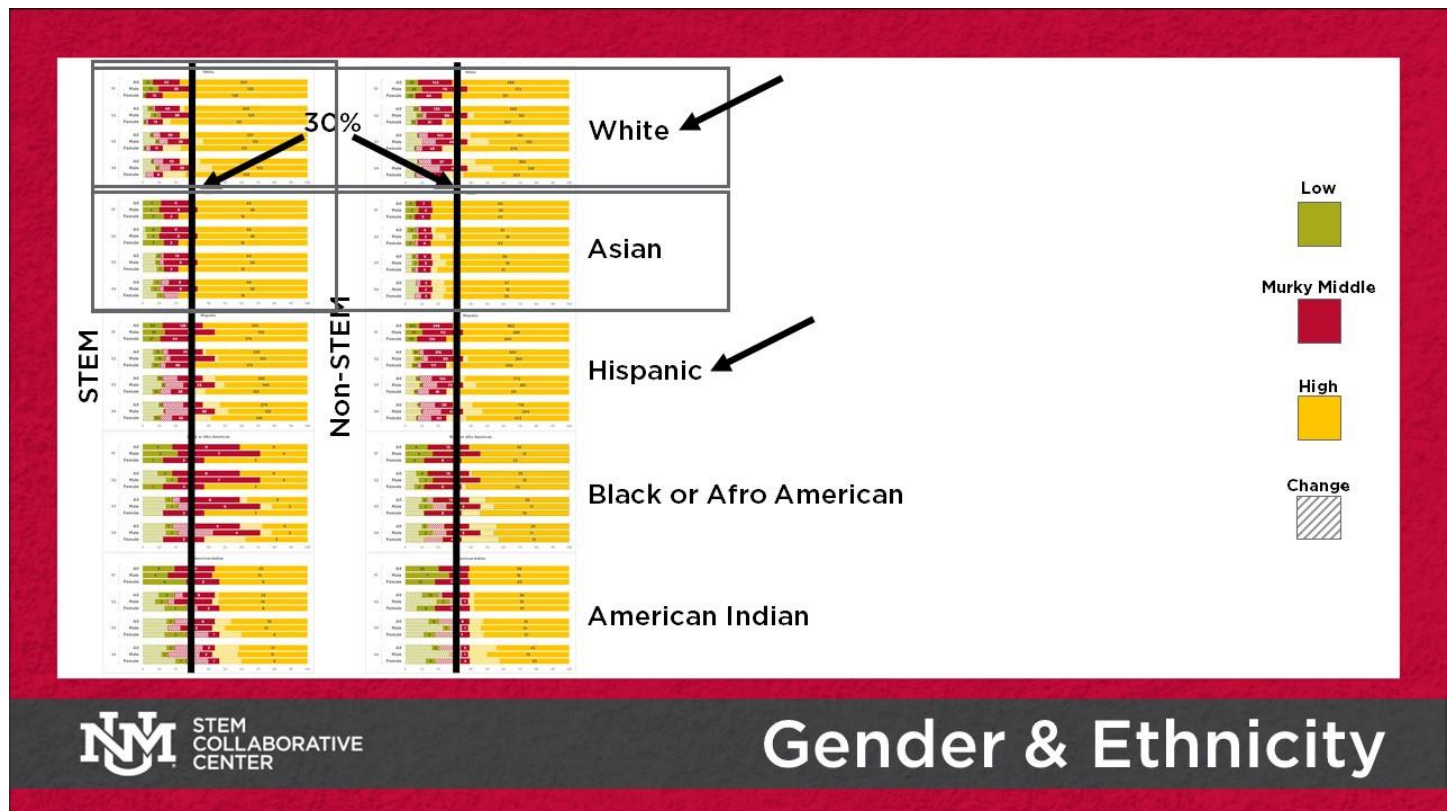


Moving forward, you will see the data represented like this, with Semester 1 on top, with 3 groups shown – All students, and then Male Vs Females. And then each semester after, as before.



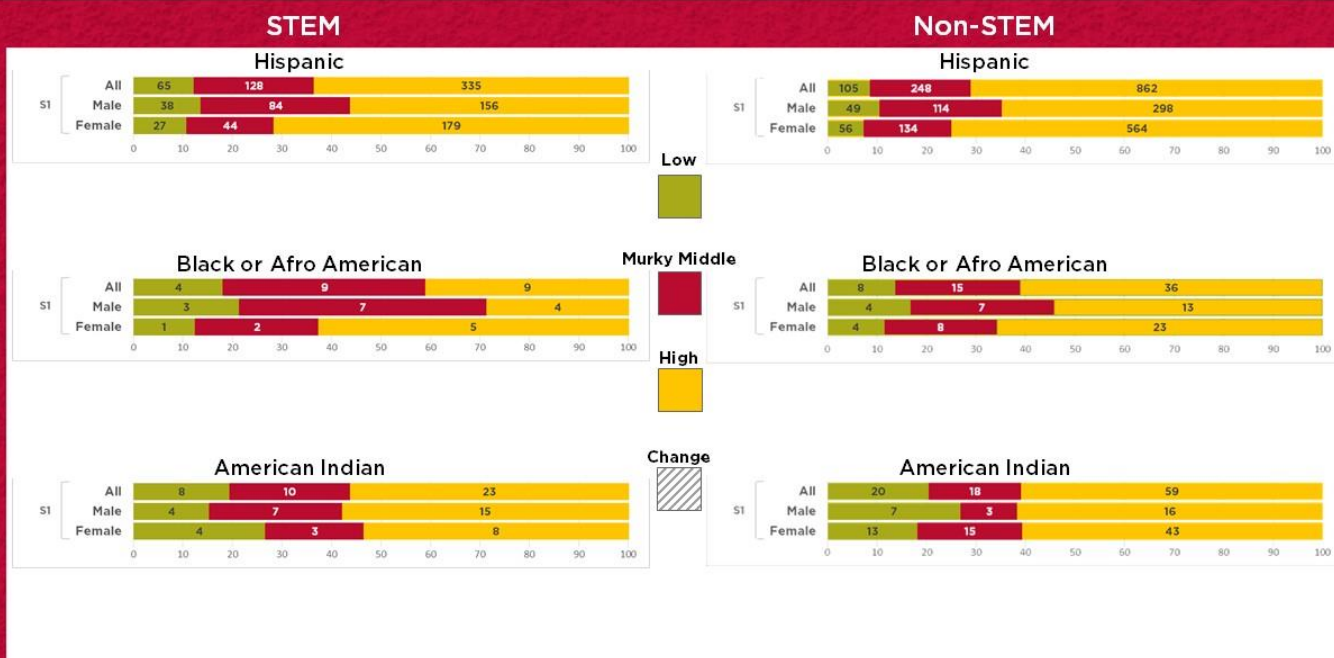
Next we looked at not only gender, but also Ethnicity. Looking at the graphs, presented the same as gender, from a far, we can see that non-Resident Aliens and Native Hawaiians have predominantly 1st Semester High GPA students. But, that could in part be due to the small sample sizes. So let's remove them from further

discussion. And, for the purposes of simplifying what we are looking at, and because the specifics are unknown, let's remove unknown race/ethnicity and two or more races.



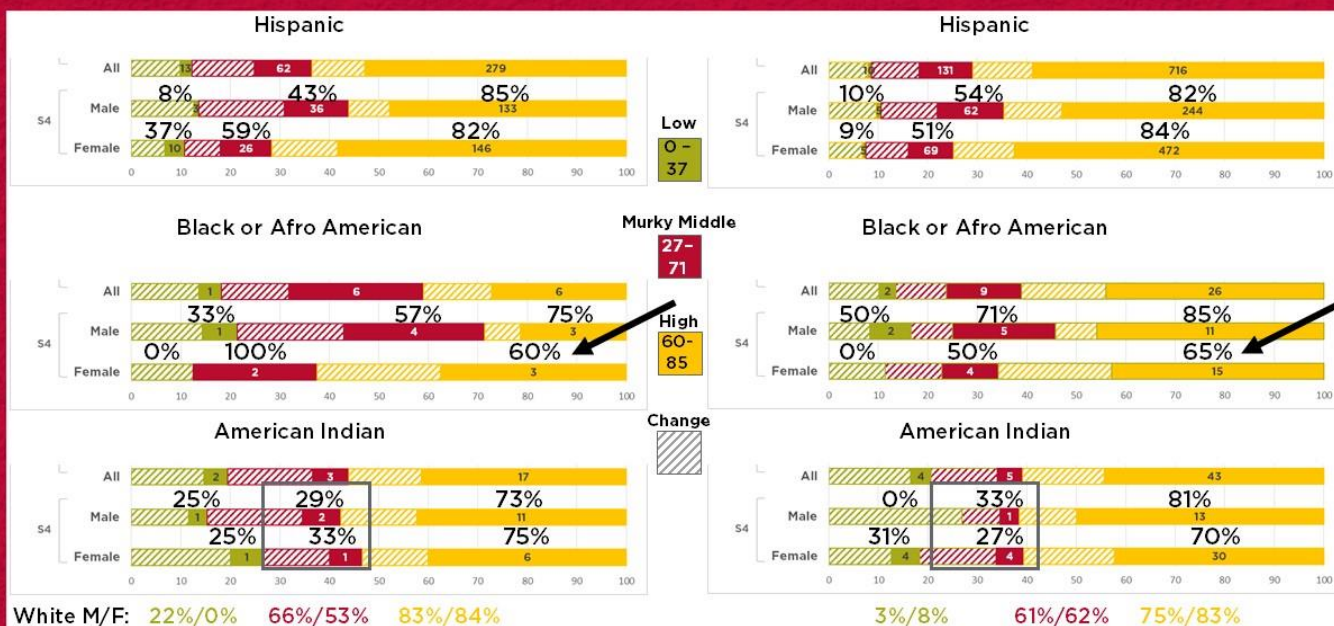
Removing these groups, we see that White and Asian STEM students have at least 70% of students were in the high GPA group after their 1st semester, with non-STEM Asians outperforming STEM Asians and White STEM students outperforming White Non-STEM students.

Close to the non-STEM White students are non-STEM Hispanic students, but STEM Hispanics students seem to struggle more with STEM.



Looking a bit more at Hispanic, Black or Afro American, and American Indian students,

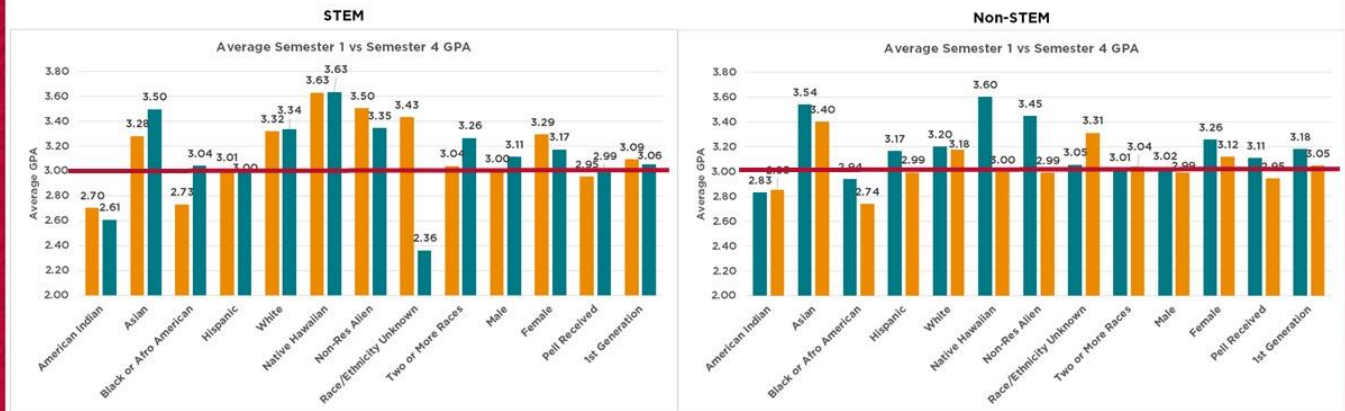
We see the same pattern as we saw when we looked at gender alone, 1st semester Hispanic and Black or Afro American Females have a larger proportion of students in the high GPA group than males of the same ethnicity, but the opposite is seen for American Indian students.



White M/F: 22%/0% 66%/53% 83%/84%

3%/8% 61%/62% 75%/83%

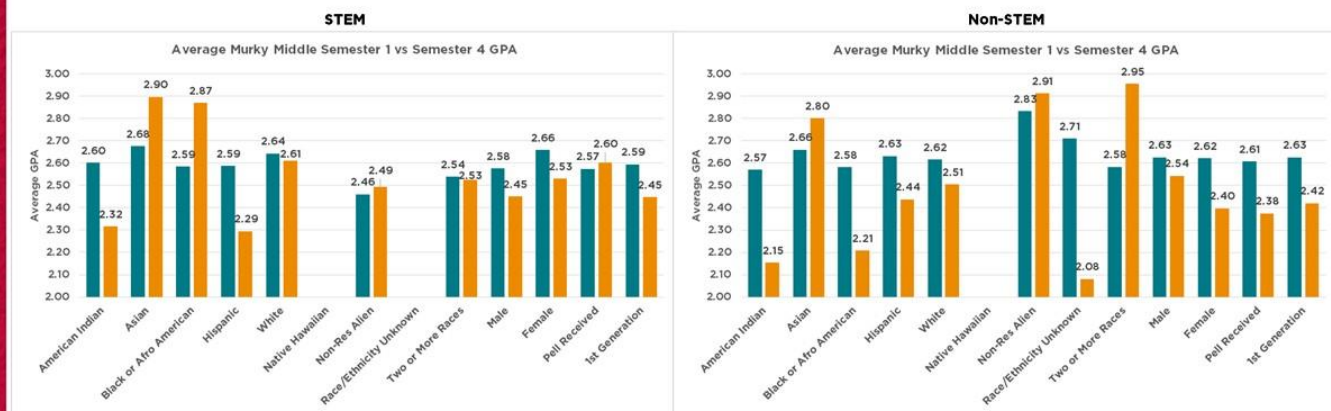
By the 4th semester, removing the few outliers, retention rates within the Low GPA groups range from 0 to 37, Murky Middle form 27 to 71, and 60 – 85 for 1st Semester High GPA students. With noticeable low retention for high GPA Black Females and Murky Middle American Indian students.



Average GPA

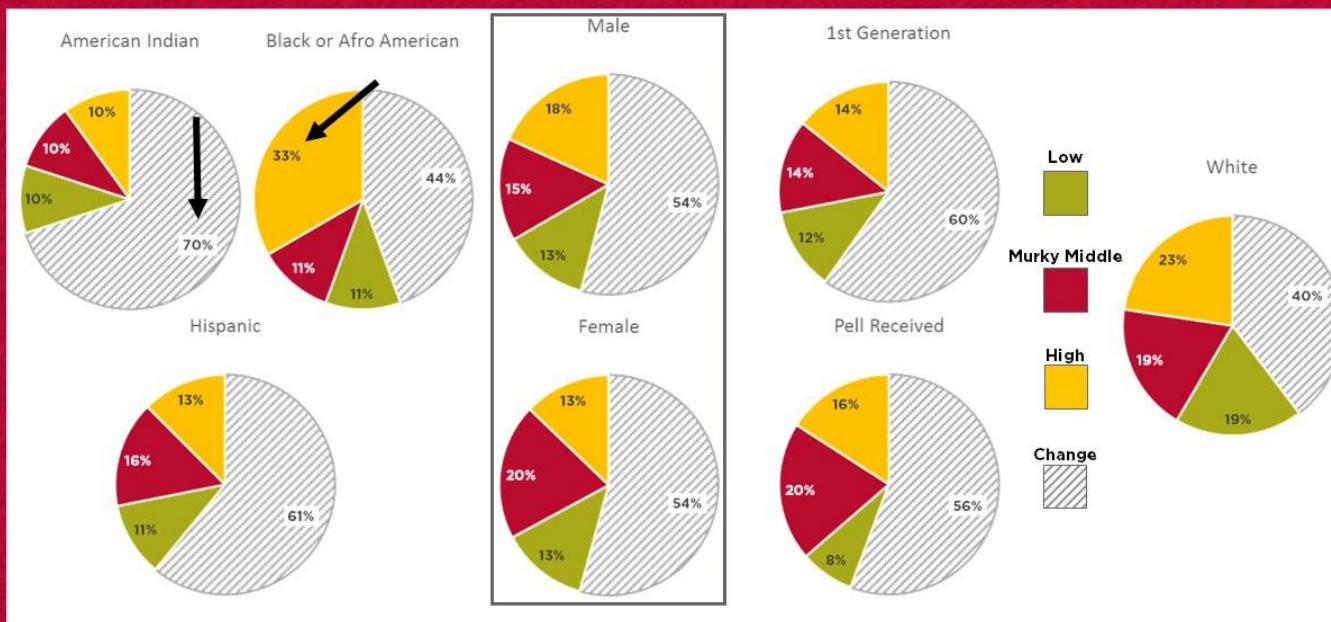
We wanted to look at more than just retention rates, but also try to track performance. If we look at Average GPA from Semester 1 STEM vs Non-STEM students, there is the same general relationship between ethnicities, with Native Hawaiian students with the highest average 1st Semester GPA and American Indian students with the lowest.

We can compare this to 4th semester GPA for STEM vs Non-STEM students, regardless of their initial semester group. Some groups see an increase in GPA and others see a fall. But most of the movement is small. With the exception of Black STEM students increase in performance and non-STEM decrease.



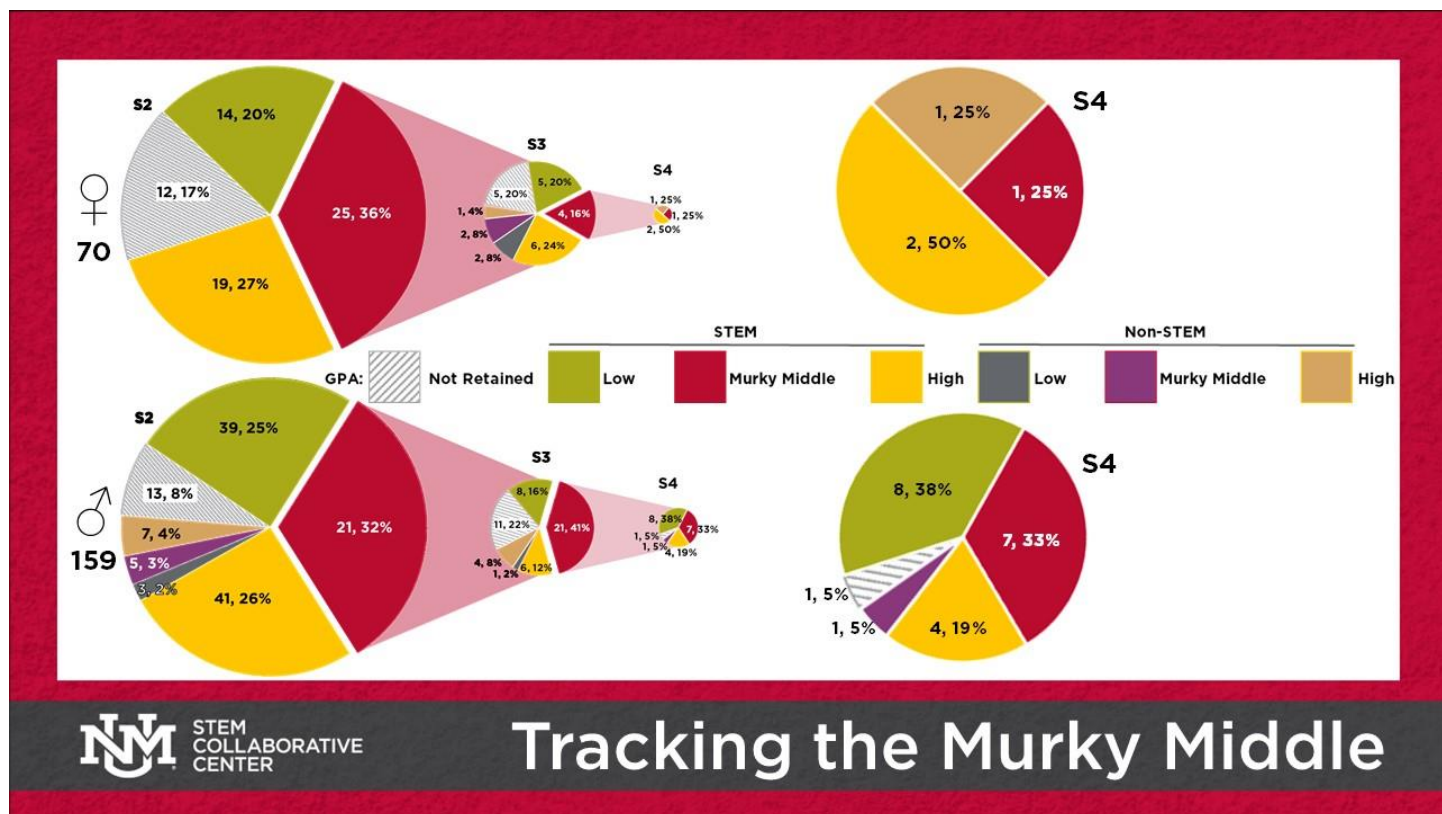
We also looked at 1st semester Murky Middle students 1st average GPA and 4th semester GPA.

Most 1st semester Murky Middle students GPAs declined by the 4th semester, with the exception of Asians, Black STEM students, and most noticeable drops in GPA for American Indian and Hispanic students, as well as Black non-STEM students.



For the students that fell into the 1st Semester STEM Murky Middle, we looked at where they were by Semester 4. The gray are students who are no longer in STEM, or have left the university. Of those that remained in STEM, their current GPA is reflected in these graphs.

We lost a LOT of American Indian Murky Middle STEM students, with a great shift into higher GPAs for Black students. There is not much difference among gender.



Related to what happens, we wanted to see what happened to STEM Murky Middle Males and Females as the semesters progressed. Each subsequent semester is looking at the students who remained in the STEM Murky Middle at the conclusion of the semester. By the 4th semester, only 1 of the initial 25 MM Females and 7 of 21 Males remained in the STEM Murky Middle. What happened to the other 24 and 14 students, respectively? You can see as we look semester by semester, some are moving up and out of the MM GPA group, some switched out of STEM, and others fell into the Low GPA group. But, it is clear that the majority of these initial MM students are not remaining and excelling within STEM.

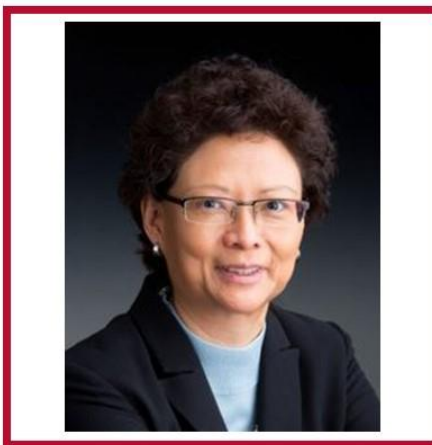
Questions?



No questions at this time. This was a lot of information to process, so please look over it when the report is sent out and provide feedback as you see beneficial.

This report serves to memorialize the presentations and discussions that took place during the 2019 STEM Cultural Colloquium. The session was not recorded. Comments from individual participants are not verbatim and were taken from event minutes.

***Walking in
Beauty on an
Ever-changing
Path...
a Native Woman
Engineer's
Perspective***



**Sandra Begay,
UNM Regent**

*Chair, STC.UNM Board of
Directors*

*City's Director of the
Environmental Health Dept.*

**2019 STEM
Cultural Colloquium**
Getting at the Gap

I want to share some Navajo experiences.

Our community was the 1st to try and do something innovative for people in the area, by using a Casino, for public infrastructure. How do you go from Uranium mining and spills, to increase economic development within Navajo nation.

Within my family I was an influence within my family, which I hadn't realized. But 4 of my nieces are engineers. One came to UNN, 1 to NM Tech, and 1 NM State. They used my happiness and career and took a similar direction. Five Native women are Navajo engineers, which is far outside of the box.

You have to know your number. The NSF takes a lot of effort to calculate the numbers of minorities in STEM fields. I know I am 1 of 13,000 US engineers, I am both female and Native. This is helpful for people to understand and feel numbers - if you put that many people in the UNM Pit's lower level, I would be the only Native American women present. That is what I have felt my whole career.

I am feeling, but also analytic. As I talk to people over time, you have to understand that your field is unique. You can be isolated and alone or very unique, interesting, and aware of what you bring with skill and knowledge. Rather than an anomaly, you are sought after for many things. That is how you can make the STEM career successful. What can you do to help the students?

I knew in the 6th grade I wanted to be an engineer. I lived outside of Gallup at a boarding school, with my mom at UNM Main campus for nursing. This was an important point to understand what boarding schools meant for children. Many generations of Natives go to boarding school. You are taken from home and live at a place that are doors clustered together with Navajos, taught by non-Natives by the ways of the world. I learned chores, discipline, cleaning by my Dutch teachers and realized white people have different cultures, too. I knew there were black people, but otherwise, brown and white is all I knew. How do I enter the bigger world?

You can talk about integration, but until you are in it, you don't understand it. My HS class graduated 42 people. I gave up my NM state scholarship to follow my best friend in engineering. She decided where to go - to a private school in Michigan with white kids, and I followed her. I was the only brown person I saw, and I lost her - blond and white. The notion of the world and cultural shock turning upside down. That is what that means. I have never left NM where snot freezes in your nose. No vistas or warm sun. No dirt. That is culture shock from minorities leaving their homes. And we wonder why so many fail.

I did what I needed to do. I left after 1 semester, thinking I was a failure. I went to UNM Gallup and knew most of my professors, small class size, and back to my world of diversity. My family I needed for family support was there. I took everything at Gallup I could. I transferred to main campus. I got lost at UNM main campus. I got lost in the system and repeated classes, but survived. I went against the grain and made it. I had it in my head. I can do technical drawings, and a teacher said "you may want to do engineering to work alongside of architects." You can also work with math people. You can help people with civil engineering. As you understand the numbers and stats, you can understand how it feels and plays out. I was almost losing my scholarship, and wasn't passing stats. I went to my professor to ask for help. He told me "those with athletic scholarships shouldn't be in engineering." He suggested I change my major once I said it was on an academic scholarship. I took that conversation to prove him wrong. Later, I shook his hand as a regent to tell him that him telling me I couldn't do this gave me the passion to get through. I had to have that.

My graduate experience: For undergrad I couldn't afford a private school. UNM served me well. I am a UNM cheerleader. That is where my heart is. But, I went to Stanford as a fellowship. I paid minimal because I am a female Native American in structural earthquake engineering. I had choice. Not all of our students have choice. I could do Stanford, Berkley or Davis. I had fellowship for all 3, and got in. I tell people if they are a minority in STEM, don't pay for grad school. You will have a great shot at having it paid for. And, in STEM you have to have a grad degree. Trying to understand from those 3 top schools, where would I go where I could get the most support. I went to Berkley, but didn't find the Native people. I had to try hard to find them. I only found 1 person. I needed that as a support system. At Stanford, they had a powwow, and I found my people. UG was

based on study groups, cohorts, I fit in, and am still friends with them. Grad school I had nobody. I had no contact with the people from there. I had a bad experience there, so I do not have affinity for them. I have the degree. But, I had major Imposter Syndrome. Pressure on me to succeed because I am in the minority that has to prove and not fail. I don't want to be thrown out. I had no idea other colleagues went through the same thing. Now that we talk about it, I am still trying to ID where that notion came from. We all felt it, but it wasn't helpful to us.

One thing I want to elaborate is my time at Sandia National Labs (SNL). I knew I needed a graduate degree technology wise. When I left Sandia, I was a principal member. There are 4 "nerd ladders" - the top is distinguished. To get there, you have to do certain career things, and it is not for me to be on top. I want to do what I am passionate for, not give up life for distinguished. As a career, 1 of 13,000, there are ways to give back to the system so the system changes. I serve on NSF committee for equity in science, we review policies for equity and opportunity for Underrepresented Minorities, and changed criteria for broadening participation. We put a lot of work in that, to just broader impacts. How do you encourage those who want to support STEM. Serve on committees. UNM has a women in STEM grant.

This past February there came a new set of regents - look at support from State senate for the current regents. I gave no money to the election, it was by reputation. There were 150 people who wanted to be a Regent for 6 slots. We were weeded, and then group interviews. I didn't know I was going to be chosen until 1 week before the announcement. I made it through! My sister is pragmatic - why do you want to do that again? I have previously been a regent. I replied with "New Governor, new way of business." But also, Garnet Stokes is why. How will we get a successful 1st time ever women UNM president without a supporter. I am supporting her at the institution. I will make her accountable, but support her from my role as a regent.

How you advise your up and coming graduates in STEM is an opening for you to plant seeds. They may not be ready, but they will remember. When I worked for strategic planning at SNL, I was told by my supervisor to think about where I want to be as a leader. I wanted to be the director of AISES (American Indian Science and Engineering Society). There had only been 3 male directors at that time. I was asked to think beyond that, because he knew I would do that, but what would be next. I had no idea. He said I should be the president of UNM. I laughed. I didn't want a PhD or academic career. Fast forward in time, Governor Johnson appointed me with the regents my first time around. I had no affiliation with him, he just put me there. That is too logical to have an engineer. The #1 job is the regents are the boss of the UNM president.

I don't have an ego, but if we don't teach our students to think beyond the immediate crisis or leadership 10 years down the line, they won't think about it. But, be careful on who you share that with because you need a coach and a mentor, not somebody who says "man, you are really ambitious, aren't you?" If you aspire big, you don't need a naysayer. Share with those you trust who will build you up and encourage you in your aspiration to gain the skills and experience.

I will leave you with what I spoke about at UNM School of Engineering graduation. I gave them aspirations with what I expect them to do with a new engineering degree - work your butt off for the next 5 years. Then, talk to your colleagues about the exciting things you are working on, then learn to speak to your manager about the work, and then other managers about the performance. Promote yourself to make others know about you and your work. Not just "shop," but the passion you have and ability to support your own career. Also, you need to understand how to give back. Engineers make money, so think about giving back. Time, philanthropy, mentoring, but you have to do that.

You didn't get here by yourself. If you think you did, think harder. There are support systems at the university who helped you along the way. If you give breadcrumbs to somebody else, maybe it won't be as hard for them. I don't pretend to say this as facetious - it took a village for me to be me. Family and friends were with me the whole way. We helped each other day after day. The staff and people at UNM helped along the way. The professors taught us. The naysayer, I figured him out, and I got an A because I figured out how he taught. I

figured out how it worked with homework, quizzes, and finals. It was like a secret code, and I shared that information. He is training you to be analytic. And, it was wow! Waste water treatment, fluid mechanics, and more. He was the one who turned me around, and I am forever grateful that I learned how he taught and I proved it by the grades.

I turned a negative into a positive. I will acknowledge I was helped by white males in my career and helped lift me up and give me challenges. Marry Ross was a great mentor. The 1st known female American Indian Engineers - a rocket scientist for Lockheed. She lived to 99. I am very grateful. For the students I mentored at Sandia - 42. I did a little at a time. I give them full credit. Walk fast, swim deeper, listen. They are now kicking butt and am proud of all of them. I am excited to tell you about the successes in my students. You have to create opportunity and think outside the box. I let my students choose their own research topics, which helped them change their research topics and grow into what they were passionate about.

The barriers are not just talking anymore. It is written down in papers, it is analytic. When you are looking into STEM and research and minorities there are unique research topics and opportunities. The research is unique to identify the barrier and success and how culture plays into that. Walking in beauty is how I walk so I can teach others. I don't do it by protesting, it is my way of understanding the student and guiding them. I do it holistically as a whole person - a Navajo way. I hope that helps understand the context of how to help with student success.



Move beyond a conversation!

Ask questions, participate
in discussions, and
exchange ideas!

Discussion:

Comment: Armando with el Centro - story telling and pathways are important to understand and share with students. This helps us break down barriers to what they face each day.

Question: If you are willing to share - how did Stanford fail you, especially after seeing what you thought they had set up.

Answer: The native community was great, but not in engineering. I saw the better class to be in. I walked graduation with a different class, so when I returned 6 months from my degree, at my graduation there were 3

native Hawaiians in structural engineering. If I started 1 year later, that would have been my group. But, I had to survive and celebrate with them. There were brown men, but not women. I was doing group projects as a group of 1 because of the clicks from a private school. And, I was an older student (2 whole years!), but also took 6.5 years to graduate from undergrad. I ran out of money in undergrad. I worked, and thus didn't get in to the click. I didn't live on campus. I was always a commuter in undergrad. I understand that is a good experience in the dorms. I was doing my own thing. For graduate school, I missed orientation. A friend's grandma died, so I supported my friend. I didn't get my picture in the Civil Engineering department because of that. There are lessons learned. I told a board of trustees, he did work on how to support minorities at Stanford. My support goes to UNM. I created a scholarship for almost done Native American students.

Q: Your story is great to show the complexity to the repeat course issue. There are some served by repeating, and others better served with moving on and I appreciate your perspective on this. *When I was a junior in high school, I did a MITE (Melbourne Institute of Technical Education) course to learn about engineering. The Civil engineers looked the happiest. It was outdoors and public. This appealed to me with public projects. I don't get heat transfer. I'm not good at electricity. But at some point the discipline doesn't matter. If you are doing a management or director job, it is the skill as an administrator and manager. I put on my engineering hat to understand why people are in turmoil. Students think that is all they will do in their career - waste water treatment - but there are more options out there. Finding out the likes and dislikes, sometimes students haven't experienced it. The tribal energy internship program I created helped show students this. And, they learned to make that elevator speech because when they encounter that tribal leader, time is short.*



Panelists:

Daniel Begay – American Indian Student Services

Moises Ibarra – Arts & Science Advisement

Dayra Fallad-Mendoza – Center for Academic Program Support (CAPS)

Patricia Lott – African American Student Services

Reina Davis – Women's Resource Center

Yesenia Ruiz – el Centro de la Raza

Doug Williams – Engineering Student Success Center

Question: What are biggest challenges you see, in STEM specifically, but in general, that are impacting the student success and graduation from UNM.

Answer: Patricia - financial support.

Reina - lack of visibility of resources, and representation in the field. Students also have holistic needs, so raising awareness of support programs.

Yesenia - lack of resources. Self-esteem and impostor syndrome. Come into institution not knowing what to expect so they get lost.

Dayra - how can we get to the students? If they didn't struggle before and are now, it is disorienting for them. Also lack of self-esteem for ability to help others.

Moises – misinformation on course progress, placement in course sequence. Dual credits not being correct, and deflation of delay of getting into the actual course work.

Daniel - financial concerns. We try out to try and help them navigate this. Culture shock. We try to get them involved on campus.

Jose - at NSO, we ask students various questions so that when they raise their hand, they can realize for that moment they are average, to help them feel like they belong.

Question; What are some things your department does well that is helping move the needle in some of these areas?

Doug - we host many student orgs that are culture based. These groups help have the students have a comfort zone in their studies and outside of the classroom.

Yesenia - we reach out to high schools to talk about what college life is, what to expect, what to work on now, they have the capability to be in college. We strive to be as welcoming and real as possible at el Centro. Everyone is welcome. Through our programs, we create a pipeline to support you all the way through. As staff, explaining our experiences and our challenges and what we did to hopefully help them. Also resources on campus and programs. We provide info.

Reina - different community engagement with youth and outreach, as well as on campus. We have a Women in STEM group to have a voice to hear their narratives and build programs around that. We are focused on collaboration on campus with groups that are already doing this and breaking barriers off campus, too. We use a narrative to help with the voice.

Patricia - we do outreach and have a summer STEM program for 8th graders into 9th grade. They tour different UNM departments to know their options when they get to college. We try to engage with them throughout high school and guide them of scholarships, etc as they are in high school. When they arrive, like all of us, we welcome everyone with open arms so they know they can come to us when they need any help at all. We allow students to express even their diversity within their own communities.

Dayra - we have changed our messaging recently. We are constantly looking inward to see if we are serving the way we need to be serving. We reach out to our students to ask how we can better community and reach out, and what do they want the space to look like. Our new message is "We don't expect you to know it all." And, sometimes we don't know either. We figure it out together." Our tutors are peers so they know the professors

and what the classes look like. Many centers across the nation hire “professional tutors” rather than undergraduates, but we want there to be a peer support to decrease intimidation. We try to create as much access as possible, including online support. We changed our platform so we are very accessible for even low band with. We partner with the ethnic centers to bring tutors to their spaces. We go to you, rather than expecting students to come to us. We got that from talking to students.

Moises - I see all the students because they have to see advisors. Sometimes I’m just advocating for resources on campus for students. We are the bumpers in bowling. We are here to help you out.

Daniel - Create an environment where it is safe for students to ask any questions. It is ok to ask. Students aren’t always used to multiple offices of resources, so we encourage them to come to us to ask and we help guide them.

Question: Usually students ask for help after they do bad on a first Math test. So, how do you think you are doing to get students in for help before this point?

Answer: Dayra - We can partner with you to do - CAPS has faculty or instructor office hours, you can have a whole space in our drop in area where you can meet with them. That can make them required or encouraged to see you within those first few students, and at our space, students see other students getting tutoring, and it normalizes it for them. Share your own failure stories with your students, so they know they can get through it. Students who do well, go get help. This helps change the mindset and language of our narratives, too.

Jose - “I don’t know how I’m doing, I don’t have scores back...” So, students should calculate something for themselves. Students do grade checks to see how they are doing in a class. This helps sit down to ask directed questions for calculating grades. CAPS does a learning strategies workshop on how to put all syllabi into a single calendar to plan and balance from there. Having the conversations early. Also because instructors have grades based on so many different things.

Sushilla - As a fellow instructor of a large killer course - I teach general chemistry. We make the 1st exam come as soon as possible to use as a feedback tool. Then I also reach out to the students who may also need it. I try to tell my students that successful students use help. My best students have seen me multiple times. The CAPS piece is also great if you can connect students to other resources.

Question: Are you able to engage with students early on? Before they have trouble with an exam.

Answer: Patricia - we ask how students are doing, not focused on class, but that opens up the conversation. In our office, we encourage students to go to instructors and office hours as much as possible.

Dayra - One of the new focus is reaching out to freshmen and sophomore students. From our interventions, we saw 40% of incoming freshmen and sophomore students. But we didn’t see the other 60%. There is always more we can do to reach out to students. In support programs, that is a code we are trying to crack on how we can get every student in the door early on.

Yadeeh – Perhaps there can be a connection between support services and practice questions and exams – a way to get an early assessment on how you are doing. For example, the support services have the resources and offer them to students if they come to their tutoring sessions. Then, students can see how they are doing on the content and can know before the 1st exam how well they might do. These would not be the practice exams that most professors provide, but some built specifically for an early assessment and only available at the support services.

Question: Have you relocated your services once a month to go where other students congregate?

Answer: Moises - we put advisors in the ethnic centers on certain days. Partnering and making it easier goes a long way.

Daniel - yes, we make efforts to go outside of our office. We work with a lot of tribal communities and are happy to go to that location to help them out. That is for all students, whether they come to UNM or not. It is not inaccessible if you want a higher education degree. We also reach out to the UNM Rainforest and have an advisor there to do satellite office hours and be where the students are. Many times it is a hello, just to engage them. But, those small things tie into knowing we care.

Doug - we have tutoring at our ESS until 5. But, weekends were not effective. There are also dedicated areas in a few spaces for tutoring that are utilized well.

Armando - We host tutoring with CAPS at el Centro, advisors come to our center, so yes, we do it. SHAC does counseling at our center. When you partner, they are willing to do that work. We will start doing hours at Valencia s el Centro, too.

Question: Tammi Duncan - Have you offered a seminar style course where students come in and you cover those type of issues. I had a Waste Course with Dr. Werner-Washburne in Biology to help establish a community and see whatever issues they are having and if they can talk to their peers, as well as support. Is there potential to establish this type of course, with small assignments like going to office hours and write about it. We helped about 80 undergraduates in mainly rural and Native American communities. And, I would offer to teach it if this is an option.

Answer: Moises - A&S is working on doing this. To have a course on how to take good notes, or self-reflect and ask for help. It is in a pilot program this semester and we have asked some campus resources talking about what and why they should use that resource. Hopefully it will be mandatory in the future.

Patricia - we have a "Black minds matter" course for them to get acclimated to university lifestyle, putting assignments in agendas, etc. There is one in the works. And, there are BOSS (Blacks Over Student Success) mentoring program where upper undergraduates are matched with lower undergrads to be paired for acclimation.

Dayra - some staff have worked close with 1st year experience courses, but in the mean time we also have our learning strategies team that focuses on non-academic skills. Any skills you need to be successful, but outside of the classroom: note taking, time management, etc. You can attend them, or request a workshop. If you have an idea for a workshop, we can work with you to put something together. Since we don't have the actual courses yet, this is another option to bring into a classroom or student org.

Daniel - Summer Bridge program is designed just for this. But, we are looking into expanding it to a full semester option on a wider scale.

Question: What change would you like to see, but are unable to due to a lack of resources?

Answer: Reina - more visibility, not just our programs, but also some within STEM. Education of different support would be great. Everyone is working well with on and off campus partners to remedy that, but more knowledge, would be great.

Daniel - increasing early engagement, especially for non-academic performance topics.

Yesenia - One of our goals is to see more students and serve more students to create programs to reach those students. To help students who don't have access to federal money or are struggling and stressed out. We want to see as close to full retention as possible.

Doug - we see nontraditional students, so having off hour's services available.

Dayra - It would be great to identify students sooner and get them connected, through working with faculty, would be good.

Question: I would encourage faculty development and education in being more inclusive in classrooms.

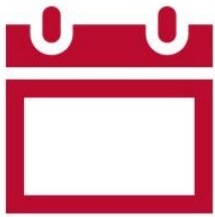
Answer: Dayra - we have a center for teaching excellence. They are faculty development folks who want to work with you. It would be great to have them come to our college to do the trainings.

Breakout Session



Move beyond a conversation

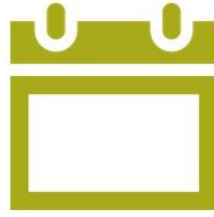
by developing processes, programs, and mindsets that address the gap reduction.



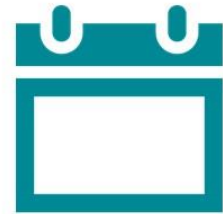
Advisory



*Instructional/
Teaching/
Classroom*



*Student
Support
Programmin
g*



Mentoring

Groups assigned based on interest indicated on the reservation form. This will begin with small group discussions, followed by a larger sharing and discussion.

Breakout Session Tasks

1. Open discussion in line with your self-identified interest
2. Use the papers on the table to write down your talking points. You will leave that on the table for us to include in the event summary.

Keeping goal 3, **MOVE BEYOND A CONVERSATION**, in mind...

- What programs have been institutionalized in the past?
- What made them successful?
- What was not institutionalized and what were the challenges that resulted in this?

Group discussion summaries:

Advisory: About 10 years ago students were advised in University College and then moved to their major advisor. That was changed to the subject advisor seeing students from the beginning to help identify the obstacles of the student, and if there are changes, it is easy to implement them. But, a lot of students fell through the cracks. Engineering kicks student out if they fail 3 times, where other advisors had misinformation. But now, it is the same answer from the same person to avoid issues. Some departments have courses that expire after 5 years of having taken it or don't have rules for requirements, so if all departments had the same rules, it would help. Probation programs were also tried and sometimes hard given institutional differences or colleges.

Instruction: An example of a program that was institutionalized and successful was Midwives of Color. One was created in the local region. The dean supported that and provided funding for this program and education about maternal child and health of communities of color. When funding couldn't be supported, it became an endowment, and is now a sustainable program.

From Group Thoughts paper:

- Grant REU – Helping students appreciate the advantages of taking on extra “work”
- NM Midwives of Color – Lost funding, which led to endowment to continue the program from success – now it is sustainable.
- Teaching workshops with inclusion – successful
- Mindfulness of DEI – in the classroom
- Never enough \$\$\$ (vs Value):
 - Funding issues – for programs, or lack thereof
 - Time/workload issues – taking on extra tasks; student availability
 - Lack of institutional support for proven successful programs (i.e. PLF)

Mentoring: Most of the conversation was related to mentoring levels and how students could get the most beneficial mentoring from a near-peer model, rather than farther away. Two types of mentoring levels were

Research and Informal/Personal/Academic. Faculty is hard to sell for research pathways. The Honors College mentoring program has a Freshman required program. But challenges are how to gain institutional support or organization for the program.

From Group Thoughts paper:

- Finding connections in pathways can be done by reframing how to do it. The difference between formal mentoring programs (less effective, more accessible) and informal mentoring (stronger relationship, harder to come by).
- Various mentoring levels:
 - Student Driven: as seen in Honors College – Seniors sign up to mentor Freshmen (mandatory) They make a connection at the start of the semester, and it is on the Freshmen to move forward with contact. Only about 1 in 4 seem to take that initiative, but the support is there.
 - Research labs (can be near-peer): hard to sell to faculty
 - Informal (can be near-peer):
 - Personal
 - Academic
 - Career Pathways
- Why haven't these happened university wide? Funding limitations.
- A successful program that was not refunded due to a line item cut at the federal level was the UnO (Undergraduate Research Opportunities) Program out of the Biology department.

Student Support: UROC was institutionalized which is great. Everyone was doing their own thing and cohorts presenting, but now is one large university event. CEP had FYRE and they had a poster presentation, but now they can present to a broader UNM community, of over 200 people! Everyone realized they wanted students to have exposure to other areas. They committee meets regularly to plan and work on details. Non-institutionalized programs is the focus on academic programs are institutionalized, but non-academics are difficult. Student supports are not university funded and are scrambling for funds, vs counting on the source of funding.

Across tables:

- The PLFs from STEM Gateway really helped courses, but that disappeared when the grant left. In Chemistry they found a non-ideal way to work around that, but it is not institutionalized. The SI and PLF leaders helped from a student support level, and they could see the student support make mistakes and how to work with that and learn and re-learn and be corrected.
- The challenges of self-funding - the many programs that have gone by the wayside because of grants, people, etc. It is unfortunate the non-directly funding programs are struggling to provide the services. And, when the people leave, the history and knowledge goes with them. The historical knowledge. Institutions see it as a “don't need to fun” but so much is lost, that is critically important.
- Grants are focused on URM students, which are important, but hard to worry about what happens if the grants end or are cut.
- The lack of communication and learning or fear of “I don't want this to be broken” can create obstacles for support. One department isn't the “Know it all” or experts.

Raise Your Hand: A Call to Action



**Dr. Valerie
Romero-Leggott**

*Vice Chancellor for Diversity,
UNM Health Sciences Center*

2019 STEM Cultural Colloquium Getting at the Gap

This report serves to memorialize the presentations and discussions that took place during the 2019 STEM Cultural Colloquium. The session was not recorded. Comments from individual participants are not verbatim and were taken from event minutes.

RAISE YOUR HAND: A CALL TO ACTION!

2019 STEM Cultural Colloquium

Friday, September 6, 2019

Valerie Romero-Leggott, MD

Vice Chancellor & Chief Diversity Officer
Professor of Family & Community Medicine
Executive Director, UNM Combined BA/MD Degree Program





My STEM-H WHY...



I am a 1st generation native NM Hispana with strong roots with my heritage. Me and my siblings are close in age, but also in family values. The importance of education was instilled in us from our parents, and being good to others, trying our best, and working hard. While I do my work now with diversity, equity, and inclusion, it really came about because of my cultural values instilled by my parents.

Changing Face of America



Cohn, J. S. (2019, August 12). U.S. Population Projections: 2005-2050. Retrieved from Pew Research Center: <https://www.pewresearch.org/hispanic/2008/02/11/us-population-projections-2005-2050/>

We know the nation is rapidly changing. By the year 2020 the racial ethnic minorities will make up the majority in the US, along with Hispanics making up the largest portion of that, and also women. This is in rural and underserved communities, too.

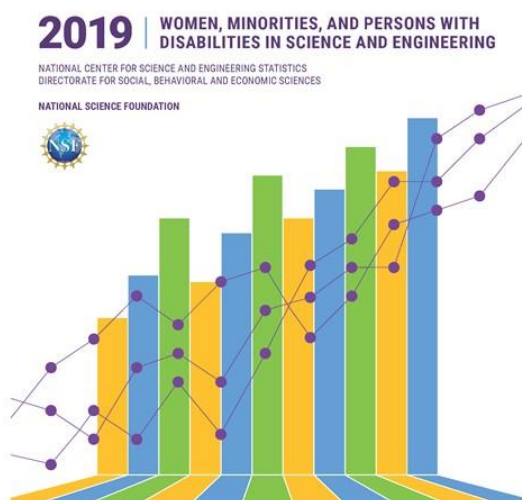
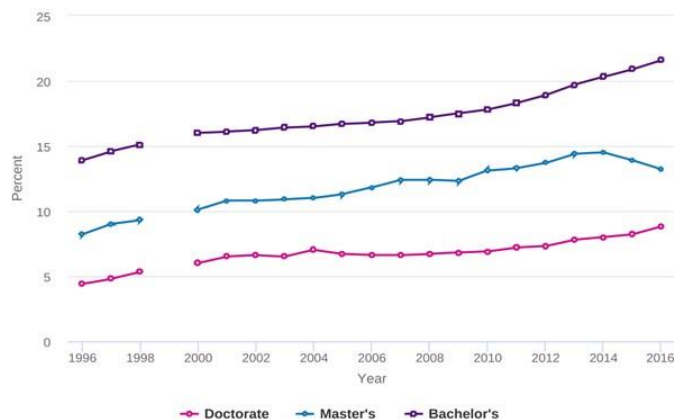


FIGURE 3-A
Science and engineering degrees earned by underrepresented minorities, as a percentage of degree type: 1996–2016



Note(s)

Data not available for 1999. Underrepresented minority groups include black or African American, Hispanic or Latino, and American Indian or Alaska Native. Data are for U.S. citizens and permanent residents only.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, unrevised provisional release data. Related detailed data: WMPD table 5-3, table 6-3, and table 7-4.

But if we talk about the diversity in the STEM H workforce, it does not reflect this. Even though we see growth in degrees, we don't see retention to facilitate a more equitable representation in academic and professional settings. Traditional programs don't offer, facilitate, or incentive community involvement, altruism, or outreach. These are important for underrepresented minorities (URM) and their learning environments.



Out of 100 Bachelor females, 12 will get a STEM degree, 3 will remain in STEM Field after 10 years.

Raise Your Hand: A Call to Action!

- **Learning Environment:** Inclusive, Intentional, Encouraging, Culturally Aware and Responsive
- **Mentorship & Role Models:** You Can't Be What You Can't See
- **STEM Identity:** Engage, Embrace, Enrich



Call to action: Enrich is about what we bring and our URM bring, it is about we enrich the locations/environments we are in. Acknowledging that.

Learning Environment

Inclusive, Intentional, Encouraging,
Culturally Aware and Responsive



Questioning is critical component in most careers. Ask questions. It is key to career progression. What we know to be true is being in an environment where asking questions early and often, in a safe and encouraging setting, is imperative for future success.

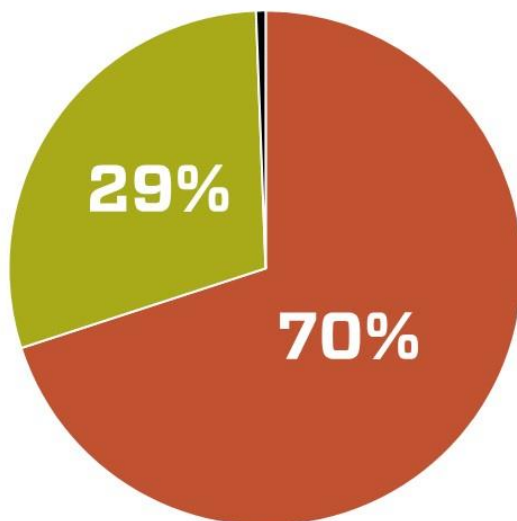
Alice Paul Tapper

- Student
- Girl Scout



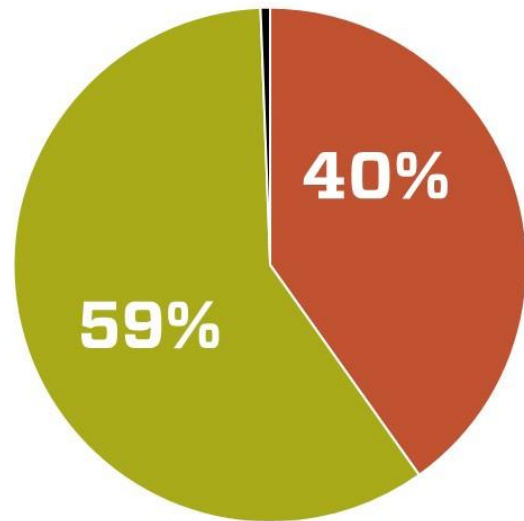
Alice Paul Tapper noticed girls wouldn't answer questions or raise their hands. She is 11. This is seen perpetuated into higher education and careers. Many studies have corroborated this.

% OF AUDIENCE



■ WOMEN ■ MEN ■ OTHER

% of QUESTIONS ASKED



■ WOMEN ■ MEN ■ OTHER



<https://phys.org/news/2019-07-science-lot-men-women.html>

One study looked at who asked questions at conferences. Most are men, even when audiences are 70% women. This impacts confidence, networking, panelist invites, etc. There are huge implications as a society.

“In science, questions matter a lot.....
But as a young female scientist speaking up
in a public forum, the stakes just felt a little
higher.”

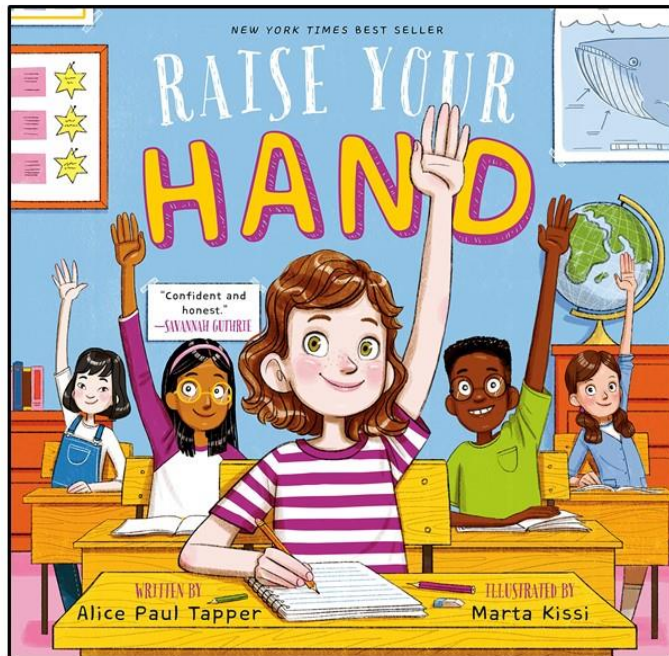
~Beryl Cummings~

“This was no occasion for bumbling or for
wandering into unknown territory.”



<https://www.latimes.com/science/story/2019-06-25/men-ask-more-questions-at-scientific-conferences-manels>

Asking questions also makes you representing populations like you, so fear of making a mistake is higher.



Raise Your Hand

By Alice Paul Tapper

Illustrated by Marta Kissi
New York Times Best Seller
Published March 26, 2019

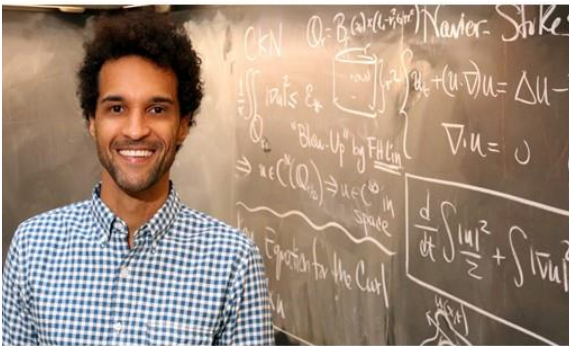


Alice Tapper wrote a book - Raise Your Hand. And, she made a Girl Scout badge for raising your hand.

Mentors & Role Models

“You Can’t Be What You Can’t See”

~President Obama



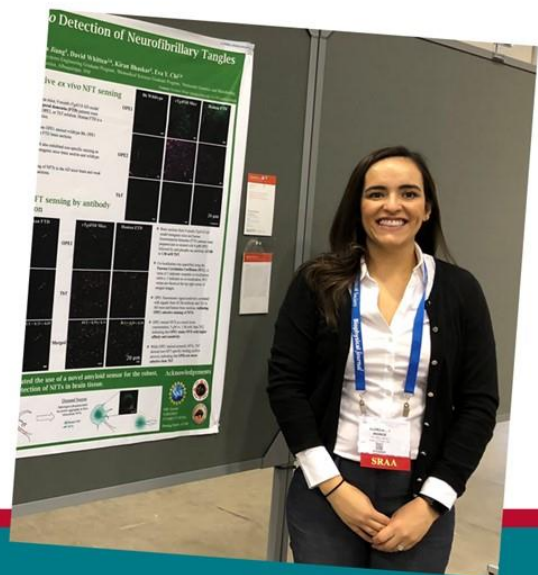
“A lot of black males don’t really have the people to look up to in STEM. They need examples of people who look like them who are successful and doing positive things.”

~Ryan Charles Hynd, PhD

Florencia Mongue, Doctoral Candidate

Chemical & Biological Engineering Department

University of New Mexico



Florencia Monge - came from Chihuahua and grew up in NM. She was one of few students of color. She didn't know the language and felt inadequate. But Math helped her feel like she had a place. But those feelings perpetuated. Looking back, if her 7th and 8th grade teachers didn't hold her to high standards and offer assistance and mentorship, she would have never gone into math and science, or perhaps even into HS. She was involved in Upward Bound and McNair to get mentoring. But in graduate school, when she connected with a mentor in her 2nd year, she met a Scientist who is female. This helped provide a sense of empowerment that she didn't have before. We need this to be something we focus on every step of the way. She also saw a decrease in women represented in STEM as she moved along in her education beyond middle school. In an experiment of egg dropping, the device didn't look fancy, but the egg was intact and got no recognition. Compared to a male counterpart who had a great looking device and was vocal and in the "in" group in science. This is still with her to this day.

STEM Identity

Engage, Embrace, Enrich



“Many of the students I knew shied away from science, and I think that’s because we’ve done a poor job of saying that doing science is not just something white guys do”

~Juan E. Gilbert, PhD



STEM Identity: When “scientist” is googled the diversity is not great, even in 2019. Where are the women of color? There are only a total of 3 Women, 1 African American Man, 1 Person with Disabilities (...also a white man!), and a whole bunch of white guys!



What about these amazing STEM Women of Color? Why don't they come up when you google “scientist” ?

It's Good News on Girls and Science

Edutopia

Published on Aug 2, 2019

A recent meta-analysis of over 80 studies finds that girls are making dramatic strides in imagining themselves as scientists—but there's still work to do.



<https://phys.org/news/2019-07-science-lot-men-women.html>

[Video: <https://youtu.be/lty8HRJpI-o>]

Joshua Sheak, MD, PhD University of New Mexico BA/MD Program Pediatric Resident



Joshua Sheak - Navajo student from the nation in Fruitland, NM. Grew up in very primitive conditions. But feels a part of his culture and traditions. But when joining the BA/MD program, knowing he had to leave these important things, created a crisis of self-identity for him. What changed was the MD/PhD and he recognized the elements of his belief systems that were important to his family were found in his academic opportunities. “Hózhó” in Navajo means you enter a state of connectedness and beauty and you unify events, people, spiritual,

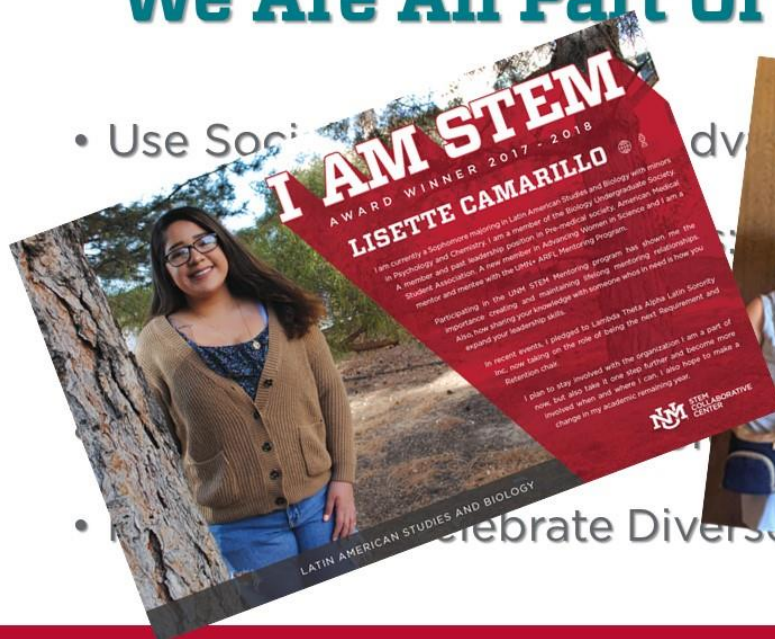
and emotional feelings for profound life lessons/results in health and well-being for all things and beings.. He now works with neonatal patients. He realized it helped him see there was *hózhó* in being a part of a medical team that supports the newborn as they enter the post-natal world. He didn't feel like he had to leave his culture, heritage, etc. to enter this new world of medicine. This is something we need to use for our students, match what we care about and define us with the educational system.

We Are All Part Of The Solutions

- Use Social Media to Our Advantage
- Update Media Used in Class: Posters, Videos, Website
- Tell Stories of Success
- Invite Diverse STEM-H Professionals Into Your Classrooms
- Recognize & Celebrate Diverse STEM-H SUPERSTARS

We Are All Part Of The Solutions

- Use Social Media to Our Advantage



New Mexico Out-of-School Time
network (NMOST) Advancing Young
Women in STEM breakfast



We Are All Part Of The Solutions

- Be Self-Aware of Implicit and Structural Biases
- Mentor and Role Model
- STEM-H Pipeline/Competition Programs
- Internships/Job Shadowing Opportunities
- Contextualize- Social Justice, Community, Altruism; Real World Learning



We Are All Part Of The Solutions

- Be Self-Aware of Implicit and
- Mentor and Role Model
- STEM-H Pipeline/Competition
- Internships/Job Shadowing
- Contextualize- Social Justice, World Learning



OUR CALL TO ACTION – OUR CALL TO LEAD

The beauty of this is that all of us can play a role in this call to action to diversify the STEM H workforce. It is incumbent upon us to inspire and walk the talk with diverse youth and adults, to envision themselves as future STEM professionals, to feel like they belong and are fully included in our classrooms, to believe that they can succeed in STEM majors and in STEM professions, to find this work meaningful and aligned with their cultural and traditional norms and, to believe and embrace that their uniqueness is an asset.

UNM STEM Collaborative Center



STEM
COLLABORATIVE
CENTER



HEALTH SCIENCES
OFFICE FOR DIVERSITY,
EQUITY & INCLUSION

UNM STEM-H Center



The **UNM STEM-H Center** is a diverse portfolio of signature regional STEM competitions, educator & student researcher professional development, resource-rich websites, and an equipment/ curricula lending library all built on a foundation of strong strategic partnerships/collaborations that help the Center reach thousands of students & hundreds of educators annually.

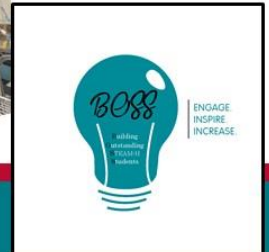


HEALTH SCIENCES
OFFICE FOR DIVERSITY,
EQUITY & INCLUSION

Building Outstanding STEAM-H Students (BOSS)

Mission

We seek to engage, inspire, and increase the level of participation of K-12 African American and other minority students in STEAM-H careers while developing an awareness and appreciation of the contributions of African-Americans in STEAM-H fields both past and present.



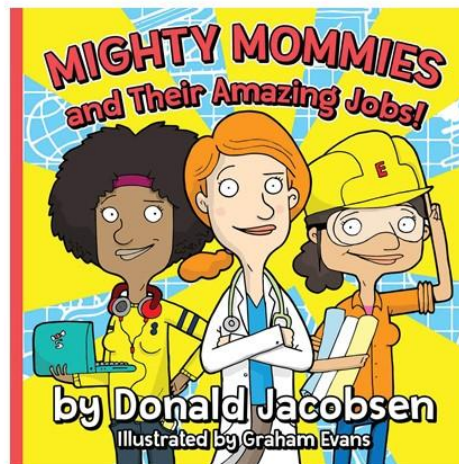
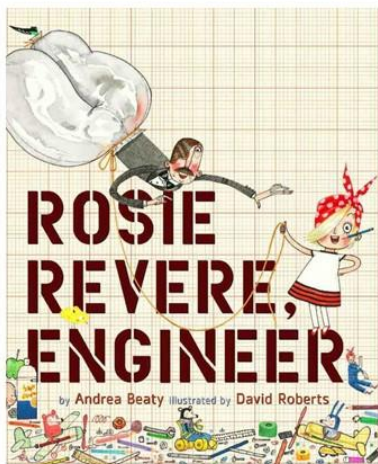
COMMUNITIES TO CAREERS CREATING NEW MEXICO'S DIVERSE HEALTHCARE WORKFORCE



Remember...

“You Can’t BE What You Can’t SEE!”

Thank you!





Academic Medicine Career Development Conference for Diverse Medical Students and Residents

The conference helped bring diversity into the classroom, into academia.

Thank you for having me.

Closing statements and Thank You - Tim Schroeder, EdD:

That inspired me to think about how I frame my own conversations and word choice and behavior to see if there are implicit assumptions I don't see there because I don't examine them closely. I appreciate that encouragement.

Thank you to the presenters and learning opportunity.