

## **Diversity & Inclusion in Science, Technology, Engineering, and Mathematics**

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During the summer of 2015, I was given the opportunity to participate in the first wave of the Indigenous Knowledge Field Camp, organized by Pacific Northwest Circle of Success: Mentoring Opportunities in STEM (PNW-COSMOS), a consortium funded by the National Science Foundation (NSF). Our consortium is a union of higher educational institutions with the overarching goal to increase the number of American Indian/Native Alaskan students to complete science, technology, engineering, and mathematics (STEM) graduate programs. A goal of the field camp was to help bridge the cultural, racial, familial origin, and other elemental differences between Native American students and their faculty mentors. Indeed, many of the camp participants had a vast array of differences, from cultural upbringing to race to our worldviews. After completing the camp and returning home to Montana, I was left with a lingering question of why these differences – which crudely make up diversity -- and the participation of minority groups such as Native Americans in STEM matter.

In 2016, while attending the American Indian Science & Engineering Society (AISES) national conference, I had the privilege to listen to Sloan Foundation program director Dr. Elizabeth Boylan speak about diversity and inclusion in STEM. After listening to her message and reading Sloan's diversity and inclusion newsletter, I came away with a firm grasp and appreciation of diversity and inclusion in STEM. I will pass on some of these interesting insights. In regards to race, the United States (US) is a diverse population, and we will probably continue to become increasingly diverse with respect to race in the future.[\[1\]](#) Diversity and inclusion may be important for a robust democracy, and this depends on equal opportunity for all Americans.[\[2\]](#) In recent times, the number of science and engineering doctoral degrees awarded to US citizens and permanent residents was 38,939, and approximately 0.45% of those science or engineering PhDs were awarded to individuals identifying as Native American/Native Alaskan. While the overall number of science and engineering doctoral degrees has increased since the early 2000s, the same cannot be said for the number of these PhDs earned by Native Americans/Native Alaskans[\[3\]](#). Educational inequalities among minorities are persistent, but my question about the impact of diversity and inclusion in the sciences remained.

Upon reading Sloan's presidential letter, I was awestruck in regards to increasing evidence suggesting diverse and inclusive classrooms can improve a student's educational quality, and that diverse and inclusive scientific groups could lead to more significant research[\[4\]](#). In 2015, Harvard economists examined 1.5 million scientific research articles published from 1985-2008, and discovered that co-authored manuscripts by researchers from different ethnic groups contained higher citation counts and additional impact factors compared to researchers identifying as one ethnic group<sup>4</sup>. Moreover, a study across the higher educational spectrum discovered that diversity in higher education is positively correlated with cognitive development, while McKinsey & Co., a global management consulting firm, discovered that 366 public companies (among the United States, Canada, Latin America, and the United Kingdom) which are ranked in the top quartile for racial and ethnic diversity, are 35% more probable to have

financial returns above their national industry medians. In the United States, there exists a linear relationship between racial and ethnic diversity within a company's executive branch, and that firm having robust financial performance.[5]

In a critical time, when our country seems divided with recent events, it is important to remember that diversity and inclusion are not only beneficial from an inherent sense, but that these two concepts are more than likely contributing to the success of businesses, educational institutions, the common workplace, and the scientific enterprise. May I encourage all my peers, especially during a challenging time, to embrace diversity and inclusion—that acting on these two things will make our society stronger, our educational institutions the places of true learning, and the creation of stronger and more innovative science.

[1] <https://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf>

[2] *Our Compelling Interests*, Earl Lewis and Nancy Cantor, on diversity to a prosperous society.

[3] National Science Foundation, <https://www.nsf.gov/statistics/2015/nsf15311/tables/pdf/tab7-4-updated-2016-08.pdf>

[4] 2015 Sloan Foundation president's newsletter pg. 3, and Freeman R.B. and Huang W. doi:10.1086/678973

[5] <http://www.mckinsey.com/business-functions/organization/our-insights/why-diversity-matters>