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MINORITY SERVING INSTITUTIONS

America's Underutilized Resource for Strengthening the STEM Workforce

Twenty first century advances require the United States to expand and diversify its science, technology, engineering, and mathematics (STEM)-capable workforce. Given the imminent transition toward a non-White majority in the United States, it is clear that the educational outcomes and STEM readiness of students of color will have direct implications for America's innovation, economic growth, and global prosperity.

The nation's roughly 700 Minority-Serving Institutions (MSIs)—institutions with an established and intentional focus to educate and train students of color—are in a uniquely poised position to serve as a large national resource for STEM talent. This report examines the most effective strategies to support student success in STEM fields at these institutions.

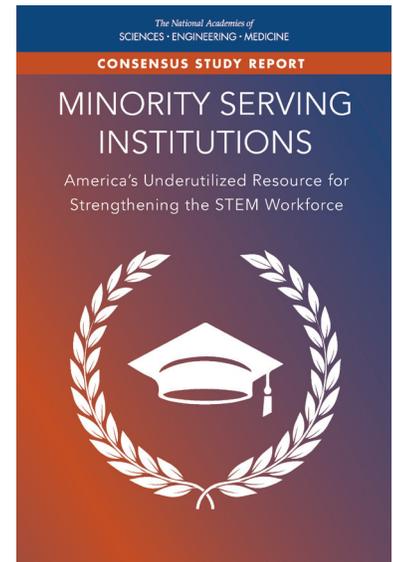
MINORITY SERVING INSTITUTIONS ARE OFTEN OVERLOOKED RESOURCES FOR STEM TALENT

Although MSIs have long provided pathways to educational success and workforce readiness for millions of nontraditional students and students of color, their contributions to STEM education and the workforce are often overlooked. In fact, more undergraduate students are enrolled in STEM fields at four-year MSIs than at four-year non-MSIs, and when taken together, Historically Black Colleges and Universities, Hispanic Serving Institutions, and Asian American and Native American Pacific Islander Serving Institutions produce one fifth of the nation's STEM bachelor's degrees. Furthermore, students who matriculate at MSIs do as well as, or even better than, those who attended non-MSIs, particularly when it comes to individual income mobility.

PROMISING PRACTICES AND STRATEGIES TO SUPPORT MSI STUDENT SUCCESS

The report provides an overview of the seven federally recognized groups of MSIs, describes MSI student populations, and reviews the nation's current investments in MSIs. Most importantly, it examines what works at MSIs, particularly the under-resourced MSIs, to overcome long-standing challenges and expand STEM educational and training opportunities for their students.

A common thread that distinguishes the most successful efforts from other initiatives is **intentionality**. In this context, intentionality is defined as *a calculated and coordinated method of engagement by institutions, agencies, organizations, and private investors to effectively meet the needs of a designated population within a given higher education institution.*



AN OVERVIEW OF MINORITY SERVING INSTITUTIONS AND THEIR STUDENTS

Minority Serving Institutions (MSIs) encompass two-year and four-year, public and private, rural, urban, and suburban institutions, enrolling from a few hundred to tens of thousands of students, and representing a range from highly selective to open-access institutions. MSI students vary in terms of race and ethnic origin, but also age, economic background, and enrollment intensity (full- or part-time). They are more likely than those at non-MSIs to be the first in their family to attend college and more likely to come from low-income backgrounds than are students who attend Predominantly White Institutions, both private and public. There are two types of MSIs:

MSIs established historically to serve a specific group of students

Historically Black Colleges and Universities

Tribal Colleges and Universities

MSIs designated by the US Dept. of Education based on enrollment and financial resources

Hispanic-Serving Institutions

Asian American and Native American Pacific Islander-Serving Institutions

Predominantly Black Institutions

Alaska Native-Serving Institutions or Native Hawaiian-Serving Institutions

Native American-Serving Nontribal institutions.

The number of enrollment-designated MSIs has grown significantly in the past 20 years, and as the country's demographics continue to change, many more MSIs can be expected to emerge.

Intentionality translates into the creation of tailored initiatives, policies, and practices that meet students where they are in their college careers academically, financially, and socially, while doing so with cultural mindfulness that moves students toward higher levels of academic achievement and self-confidence.

There are seven broad practices and strategies that hold the greatest promise for strengthening the quality of STEM education, research and workforce preparation for MSI students—if implemented with intentionality and fidelity and sustained over time.

(1) Dynamic, multilevel, mission-driven leadership

MSIs are best served by forward-looking, mission-driven presidents and other senior leaders who have a well-articulated vision and willingness to hold themselves accountable for committing the necessary capital, educational resources, and services to meet the particular needs of their student body.

(2) Institutional responsiveness to meet students where they are

Because of the student populations they serve, MSIs have a particular need to design and implement policies and practices that intentionally support nontraditional students and students of color, especially those in STEM fields, who may need additional academic, financial, and social support and flexibility.

(3) Supportive campus environments

A welcoming and nurturing campus climate—one that supports a fundamental sense of community and an equity-oriented culture—contributes to academic attainment and professional commitment at MSIs.

(4) Tailored academic and social supports

Intentional policies and practices, and holistic, student-centered supports, such as Summer Bridge programs and supplemental instruction, help guide students through higher education and make an important difference in persistence and success.

(5) Mentorship and sponsorship

Meaningful, accessible relationships with faculty and other meaningful adults are critical to students' success in STEM education, and their advocacy and support can help to advance students' careers.

(6) Availability of undergraduate research experiences

Entry into graduate and professional fields increasingly demands high-quality research experience as an undergraduate. Increasing numbers of MSIs are pioneering creative ways to extend such opportunities to more students through course-based research experiences and external partnerships with research-intensive colleges and universities, government agencies, and private companies.

(7) Mutually beneficial public- and private-sector partnerships

Partnerships between MSIs and business, industry, and state and federal governments, as well as other MSIs and non-MSIs, have the potential to provide alternative funding mechanisms and educational and research opportunities for students and encourage collaborations among faculty and industry scientists, engineers, and health professionals.

A CALL TO STAKEHOLDERS

A commitment to help implement these promising practices and effective strategies is needed from a diverse group of stakeholders—including federal and state governments, tribal nations (particularly in the case of Tribal Colleges and Universities), the philanthropic and private sector communities, and MSI leaders and faculty. The committee calls on them to take bold, innovative steps to enhance and enrich the education, student development, training, and research capabilities of MSIs.

Identifying what works at MSIs, though, is only half the battle; **substantial resources are needed to help promote, sustain, and advance the success of MSIs and their students.** Governments and the business community need to invest more public and private dollars in MSIs, and MSIs need to continue to use those dollars wisely, strategically, and with an eye toward being more accountable for their use. Finally, all stakeholder partners should approach these responsibilities with a commitment to excellence and with a heightened sense of urgency, both for the benefit of students and for the well-being of the nation.

SUMMARY OF RECOMMENDATIONS

The recommendations of this report provide guideposts for local, regional, and national stakeholders in the areas of Leadership, Public and Private Partnerships, Financial Investments, and MSI Performance and Accountability. The committee hopes that the report will incentivize the adoption of evidence-based approaches to support and advance STEM education and workforce outcomes for the tens of millions of students enrolled at two- and four-year MSIs.

Leadership

Recommendation 1: Leadership of MSIs, including governing boards, presidents, deans, and provosts, should develop appropriate policies, infrastructure, and practices that together create a culture of intentionality upon which evidence-based, outcomes-driven programs and strategies to support student success are created and sustained. This is especially important for emerging and newly established MSIs.

Recommendation 2: To cultivate the next generation of forward-looking, mission-driven MSI leaders, MSIs and their stakeholders, including professional associations and university-based leadership programs, should prioritize and invest in succession planning and professional development training programs for current and future leaders of these institutions.

Public- and Private-Sector Partnerships

Recommendation 3: Leadership from within MSIs, non-MSIs, government agencies, tribal nations, state agencies, private and corporate foundations, and professional, higher education, and scientific associations should prioritize efforts to establish new or expand current mutually beneficial and sustainable partnerships that support education, research, and workforce training for the nation's current and future STEM workforce.

New and Expanded Financial Investments

Recommendation 4: Public and private funders should continue to develop and expand grant competition programs that serve the nation's MSIs. Such agencies include but are not limited to the Department of Education, Department of Energy, Department of Defense, National Aeronautics and Space Administration, National Science Foundation, National Institutes of Health, tribal nations, state agencies, private and corporate foundations, and local, regional, and national businesses.

Recommendation 5: Given the institutional resources required to effectively compete for large grants and contracts, public and private funding agencies should reconsider the practicality of current competitive funding models for under-resourced MSIs. Such agencies include but are not limited to the Department of Education, Department of Energy, Department of Defense, National Aeronautics and Space Administration, National Science Foundation, National Institutes of Health, state agencies, private and corporate foundations, and local, regional, and national businesses.

Recommendation 6: MSI presidents and senior leadership should take aggressive, proactive steps to better position themselves to compete for public and private STEM research grants and contracts, either independently or in collaboration with local, regional, and national partners.

Recommendation 7: Public and private funding agencies should issue new and expand current grant opportunities to support evidence-based research on MSIs, their students, and the sociobehavioral and sociocultural factors and conditions that impact the efficacy of programmatic interventions at these institutions. Such agencies include but are not limited to the Department of Education, National Science Foundation, National Institutes of Health, tribal nations, state agencies, private and corporate foundations, and local, regional, and national businesses.

Recommendation 8: To more effectively measure MSIs' returns on investments, and to inform current and future public-private partnership initiatives, Congress should prioritize actions to enhance the clarity, transparency, and accountability for all federal investments in STEM education and research at MSIs, including the production of an annual MSI STEM Research and Procurement report.

Recommendation 9: As it considers regular adjustments to federal higher education policies and programs—including, but not limited to, its reauthorization of the Higher Education Act—Congress should use the legislative process to incent greater investments in MSIs and the strategies outlined in this report.

MSI Performance and Accountability

Recommendation 10: Federal and state educational agencies, state legislators, and other entities that utilize indicators of institutional success, including for accountability purposes, should reassess and refine methods of measuring student outcomes to take into consideration institutional missions, faculty investment, student populations, student needs, and institutional resource constraints.

COMMITTEE ON CLOSING THE EQUITY GAP: SECURING OUR STEM EDUCATION AND WORKFORCE READINESS INFRASTRUCTURE IN THE NATION'S MINORITY-SERVING INSTITUTIONS

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For More Information . . . This Consensus Study Report Highlights was prepared by the Committee on Closing the Equity Gap, based on the report *Minority Serving Institutions: America's Underutilized Resource for Strengthening the STEM Workforce* (2018). The study was sponsored by the ECMC Foundation, the Helmsley Charitable Trusts, the Alfred P. Sloan Foundation, the W.K. Kellogg Foundation, and the Wallace Foundation. Any opinions, findings, conclusions, or recommendations expressed in this publication do not necessarily reflect the views of any organization or agency that provided support for the project. For more information go to. Copies of the report are available from the National Academies Press, (800) 624-6242; <http://www.nap.edu>, or www.nas.edu/MSISYSTEM.

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