

USD SSOM Inclusive Science Initiative
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Goals and Aspirations: The University of South Dakota's (USD) HHMI-IE program, South Dakota Needs Scientists!, aspires to become a regional leader in providing high-quality training in the sciences to undergraduates from non-traditional background. Specifically, our program focuses on students from under-represented minorities (URM) and those who are the first in their families to attend college with an emphasis placed on American Indian students who represent the largest ethnic minority in South Dakota. The program's philosophy is that students from under-represented groups already have to make many changes to adapt to their academic institution and it is time for the institution to adapt to the needs of these students. Our programmatic goals are to enhance mentorship training, create an environment that stimulates an interest in the sciences in a broad range of students, provide the tools for the students themselves to cultivate a science identity that meshes with their cultural identity, and to understand in greater detail the motivational processes that promote student success in the sciences. Ultimately, this program aspires to increase the number of students from under-represented backgrounds enrolled as science majors at USD to levels that are consistent with the demographics in our region.

Our Project: To achieve these goals USD will do the following.

- Develop mentorship training practices of the faculty and staff that emphasize culturally sensitive, asset-based approaches to guide students enrolled in science majors. USD will create a highly trained cohort of faculty/staff using the National Research Mentoring Network's "Train the Trainers" course and these faculty will go on to teach best mentorship practices to the faculty and staff mentors at USD, thereby raising the quality of academic guidance throughout the institution.
- Increase interest in the sciences by URM students and provide a path for entering science majors at various levels in a student's academic career. This will be accomplished, in part, through the development of courses that have culturally relevant themes to the students of South Dakota. Another component will be to provide support to student organizations promoting the sciences among the URM students at USD (e.g. the USD chapter of the American Indian Science & Engineering Society), so that these students may engage in self-directed activities to develop a scientific identity that complements their cultural identity.
- Utilize lecture capture technology to (1) enhance the capacity of students to maintain contact with courses even when cultural and family obligations draw them away from school and (2) to utilize this technology to promote more active learning pedagogies, e.g. flipped classrooms.
- Conduct an education research study to develop a detailed understanding of the motivational processes that impact URM vs. non-URM students' success as science majors.

Progress and Learning: Progress will be measured using a combination of formative and summative assessment tools as well as through the educational research study that focuses on factors influencing student motivation. The assessment plan will analyze institutional data in terms of numbers of URM students enrolled in science majors, their retention and their graduation rates. The assessment plan will also utilize surveys to determine the number of URM students involved in research, travel to professional conferences, involvement in student science organizations, the number of students who have been able to take advantage of lecture capture technology, and the number of faculty/staff involved who have participated in mentoring training. Progress will also be measured in terms of changes in student motivation to choose and persist in science majors as evaluated by the education research component of our study. Another indication of progress will be the successful institutionalization of the principles and values of inclusive excellence among the faculty, student and staff engaged in the science curriculum at USD. That students of all backgrounds have assets to bring to the scientific enterprise and that the scientific enterprise best serves all of society when all of society participates in science. Finally, and most important, we hope that the program will help faculty and staff to learn what types of interventions (note the plural) have the greatest impact in improving student motivations from all backgrounds to enter and complete an academic major in the sciences.