NMHU/LCC Science and Agriculture Summer Experience (SASE) Project

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Collaborators

- New Mexico Highlands University (NMHU)
  - Master's I university in northern New Mexico (Las Vegas, NM, pop. 16,500)
  - NMHU is a federally designated Hispanic-Serving Institution (HSI) population of 2234 students
  - 54% are Hispanic, the highest percentage Hispanic enrollment of New Mexico's six state universities (Spring 2004)
  - NMHU has the highest proportion of Native American students of any non-tribal postsecondary school in the state (10%, Spring 2004)
  - The only public university in the northern third of New Mexico
  - Serves a large rural population characterized by diverse cultural, economic, linguistic, and educational backgrounds, ranging from 84% Hispanic (Mora County) to 75% Native American (McKinley County)

Collaborators

- NMHU continued…..
  - 2000 US Census ranks New Mexico as the poorest state in the nation
  - Poverty rate in San Miguel County is 24%—double the 12% national average
  - 7.8% unemployment is 1/5th higher than the US average (NM Dept of Labor 2003)
  - 81% of NMHU students receive loans, grants, or work subsidies
  - NMHU is 3rd in the nation in terms of the rate of eventual STEM doctorates achieved by Hispanic NMHU STEM BS recipients (Quintana-Baker 2000)

Collaborators

- Luna Community College (LCC)
  - The only community college in northeastern New Mexico
  - Located in the city of Las Vegas, New Mexico
  - In 1969 LCC was founded as a vocational training facility
  - In 2000 the name Luna Community College was adopted to signify that the college was a comprehensive community college
  - LCC continues to offer a broad range of vocational, technical, and professional education programs

CSREES\USDA Relevant Priority or Mission Area

- Educational Needs Areas:
  - Instruction Delivery Systems:
    - Hands-on research
    - Data collection for scientific analysis
  - Scientific Instrumentation for Teaching:
    - Instrumentation purchased with this grant will provide students with hands-on experience of equipment used in the real world

CSREES\USDA Relevant Priority or Mission Area

- Student Experimental Learning: A combination of classroom instruction and field demonstrations will ensure that students are provided the opportunity to solve complex problems in real-world situations.
  - Lab report writing activities
  - Excel spreadsheet activities
  - PowerPoint presentations

CSREES\USDA Relevant Priority or Mission Area

- Student Recruitment and Retention:
  - Students will be exposed to the possibilities of agriculturally related science (recruitment at high schools and LCC)
  - Students will be introduced to educational and career opportunities they may not otherwise consider
  - Students selected for the summer-experience program will begin their college education with an opportunity for small group and one-on-one mentoring with faculty
  - The program will ensure that students make the best use of existing university financial aid and student services to better assure their retention and academic success
  - Financial need will be a consideration in student selection
  - Payment of food and lodging and stipends for participating students will be essential

USDA Strategic Goals

- Strategic Goal 1: Enhance economic opportunities for agricultural producers.
  - Local commitment to sustainable use of the land runs deep.
    - Spanish land grant holdings
    - Many families continue to maintain small agricultural operations (“land rich”)
    - People of this area frequently live in poverty with a per capita ($13,268) income nearly half that of the state average ($21,587)
    - Benefits of training local students in agricultural sciences: 1) improving local producers’ ability to make best use of resources; and 2) training a local workforce for agriculturally related positions, thereby decreasing the need to “farm out” employment opportunities

USDA Strategic Goals

- Strategic Goal 2: Support increased economic opportunities and improved quality of life in rural America.
  - In an age where education equals employability, Hispanics face sizeable challenges
    - In northeastern New Mexico 80% of the population is Hispanic
    - Nationally, Hispanic tenth graders are three times as likely to drop out before finishing high school as white tenth graders (Green, 2000)
    - In San Miguel County, 26% of the 25 and older population failed to complete high school in contrast to only 21% with a Bachelor's or graduate degree
      - Preconceived notion that education is not necessary to "work the land."

USDA Collaborators

- Natural Resources Conservation Service (NRCS)
  - Offers technical information and financial assistance to New Mexico's many farmers and ranchers
  - It also benefits homeowners, consulting firms, other federal agencies, state and local governments, and technical service providers
- United States Forest Service (USFS)
  - Manages seven National Forests in NM
    - Fire
    - Timber
    - Ranching
    - Restoration

Objectives

- **Project Goal:** To improve recruitment and retention of Hispanic students in agricultural sciences

- *Process Objectives:*
  - Develop a formal partnership between NMHU and LCC for recruitment and retention of underrepresented students in agricultural sciences including outreach to high schools.
  - Create a summer institute for incoming freshman and LCC transfer students (initial goal for 26 students) that will provide an overview of agricultural sciences followed by in depth exposure to specific fields such as soil sciences, microbiology, water sciences, and GIS.
  - Select a student for full scholarship toward degree in agriculturally related sciences. Scholarship will include extensive mentoring from project faculty.

Activities	Timeline	Products, Results, and Measurable Outcomes
Process Objective 1: Develop a formal partnership between New Mexico Highlands University and Luna Community College for recruitment and retention of underrepresented students in agricultural sciences including outreach to high schools in northeastern New Mexico.		
Make initial contact with Luna Community College to develop partnership plan and to establish LCC project representative.	Completed	• Finalized agreement • Letter of support signed by LCC President
Make initial contact with high schools in northeastern New Mexico to obtain permission to visit schools and recruit seniors interested in science.	8/06	• Verbal agreement with school counselors
Create a student application form for student recruitment for summer institute in collaboration with LCC	8/06	• Finalized student application form
Visit high schools in northeastern New Mexico and give presentation on the importance of the agricultural sciences. Also disseminate applications and begin to recruit students for summer institute.	8/06 to 4/07	• Familiarize students with Ag. Sciences • Begin recruitment of student participants
Form a committee for student application evaluation and selection of students to participate in summer institute.	12/06	• Final list of evaluation committee
Disseminate application form to LCC, NMHU, and high schools in northeastern New Mexico.	1/07-2/07	• Begin recruitment for summer institute
Evaluation committee will review and evaluate applications and make final selection.	3/07	• Final list of students selected to participate
Write formal letter of acceptance to students and ask for their commitment to participate in summer institute during summer 2007	4/07	• Final list of student participants

Process Objective 2: Create a summer institute for incoming freshman and Luna transfer students (initial goal for 20 students). The institute will provide an overview of agricultural sciences followed by in depth exposure to specific fields such as soil sciences, microbiology (food borne pathogens), water sciences, geology, and GIS (Geographical Information Systems).			
	The first day of the institute students will meet at one central location and meet with NMHU and LCC representatives where they will be instructed on their food, lodging and the activities for the weeks that follow.	8/07	Account for all student participants Show students their living quarters
	First day midmorning, students will take a tour of the NMHU library and learn how to do a literature searches using the resources available at that library.	8/07	Students will use this skills when completing their lab report and presentation
	First day afternoon, separate students into groups and assign students to instructors for the rest of the week (Monday afternoon to Friday).	8/07	Students work on activity module A
	Saturday, meet with students in computer center and work on lab report write-up	8/07	Students complete lab report
	Monday morning have students meet with their instructors to review lab report and further discuss Activity Module A findings	8/07	Students will receive feedback from instructors on their writing and interpretation of lab results
	Monday midmorning, students will attend presentation by NRCS personnel on the importance of agricultural sciences and its sub disciplines.	8/07	Students will be informed of career possibilities within the USDA and NRCS
	Monday afternoon, student groups will switch instructors and begin to work on Activity Module B (Monday afternoon to Thursday).	8/07	Students work on activity module B
	Friday, students will work with their instructors on preparing a presentation of Activity Module B using PowerPoint.	8/07	Students learn how to prepare a presentation
	Saturday morning students will present their findings to the other student group, instructors, Project Director, LCC representative and other invited guests (e.g. family members, local agricultural producers).	8/07	Students will gain experience on their presentation skills
	Coordinate transfer of students to Freshman Experience (life and study skills instruction provided by NMHU Student Services) prior to start semester.	8/07	Seamless transition of responsibility

Process Objective 3: Select a student for full scholarship toward degree in agriculturally related sciences. Scholarship will include extensive mentoring from project faculty.			
	From student participants identify (in consultation with participating faculty) several outstanding students.	August 2007	• List of three to four students that will be eligible for the student scholarship
	Identified students will submit application form to the Project Director, and will include a copy of transcripts and a one page essay indicating their academic goals and career goals in the agricultural sciences.	August 2007	• Student applications
	Evaluation committee will review and evaluate applications and make final selection.	September 2007	• Student selection
	Offer selected student full scholarship to begin attendance at NMHU.	September 2007	• Enrollment of student at NMHU
	Project Director will continue to mentor scholarship student throughout his/her academic career.		• Insure student success

Evaluation

- Outside evaluators will work with PD to ensure effective program continuation and completion
- Outside evaluator will conduct both summative and formative evaluation
  - Twice yearly internal evaluations of:
    - PD effectiveness at local HS
    - Pre and post summer activity evaluation
    - Field instructor evaluation

Evaluation

- Formative evaluation will be an ongoing effort to determine the degree to which the project successfully completes process objectives and supporting activities
  - Evaluation process will enable project personnel to adapt in years 2 and 3 according to lessons learned
  - Student responses will be used to modify and improve the students' experiences in future SASE institutes

Expected Impact

- Key to summative evaluation will include the degree to which the project achieves the following:
  - NMHU enrollment of Hispanic students designating agriculturally related sciences as a major or minor increases by 15 students in year 1; 25 students in year 2; and 30 students in year 3
  - Nurture at least 50% of all participating students to continue college enrollment throughout all three years of the project