FINAL REPORT

RECRUITMENT AND RETENTION OF INDIANS IN SCIENCE AND ENGINEERING (RISE)

Grant Number: NAG5-6088

Effective Date: 07/15/1997

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Submitted by

Dr. Sunil Karnawat

Turtle Mountain Community College

P. O. Box 340

Belcourt, ND 58316

Phone: (701) 477-7862

ANNUAL REPORT

Effective Date: 07/15/1997

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Expenditures Summary

From 7/15/1997 to 7/14/1998

	NASA Requested (including prior year carryover)	Expenditures of NASA funds	NASA Balance (carryover to next year)	Institution expenditures (cost sharing)	Other funds expenditures
1. Direct Labor					
a. Salaries, wages	$ 8,400	$ 8,413.11			XXXXX
b. Fringe Benefits	$ 1,600	$ 1,238.25			XXXXX
2. Other Direct Costs					
a. Subcontracts					XXXXX
b. Consultants	$ 1,500	$ 1,000			XXXXX
c. Equipment	$ 3,800	$ 3,800			XXXXX
d. Supplies	$ 500	$ 1,302.64			XXXXX
e. Travel	$ 7,000				XXXXX
f. Communication Costs (telephone, postage, printing)					XXXXX
3. Indirect Costs 12 %	$ 3,200	$ 2,351			XXXXX
4. Other Applicable Costs					
a. Student Stipends	$ 4,000	$ 4,000			XXXXX
5. Total Expenditures	$ 30,000	**$ 22,105**			

Funds Awarded = $ 22,105 *(see "Previous Obligation" in item 8 of the Award Letter)*
Funds Expensed = $ 22,105 *(actual expenses during the Award Period)*

A. Narrative Report - Project Period: From 7/15/1997 to 7/14/1998

Fifteen students from Turtle Mountain Community College were selected to participate in activities of the RISE project last summer. Eight students successfully completed project activities and received stipends for their participation. These eight students are (1) Jamie Gable, (2) John Morin, (3) Patrick Belgarde, (4) Jason Laducer, (5) Alex Johnson, (6) Eric Houle, (7) Gary Renault, and (8) Kenny DeCoteau.

In the fall of 1998, Jamie Gable and Gary Renault went to North Dakota State University to pursue their undergraduate degrees in mechanical engineering, and John Morin and Alex Johnson joined the University of North Dakota's electrical engineering and industrial technology programs, respectively. Remaining four students will continue to participate in the RISE activities this year and transfer to the universities next year. Seven students who failed to complete the RISE project activities during the current award period are encouraged to participate again this fall.

The RISE students were enrolled in a special course called "Introduction to Engineering Materials." The project director, Dr. Karnawat, taught the course on Saturdays and Sundays. Theoretical and mathematical background on engineering materials and careers in various engineering professions were discussed in this course. The students attended guest lectures given by engineers and professors and visited local industries. In addition, the students went to North Dakota State University (NDSU) at Fargo, ND, and the University of Minnesota (UMN) at Minneapolis, MN, to tour their engineering departments. At NDSU, they conducted laboratory tests on various engineering materials, such as concrete, steel, wood, plastics, and carbon composites. The students investigated the mechanical behavior of these materials under various loading conditions, collected data, interpreted data, identified possible errors, determined the mechanical properties, and wrote reports on their findings. The students created posters describing their results on the behavior of engineering material. The posters were displayed in the TMCC's student lounge.

The students were encouraged to present their results at local, state, and national conferences. Jason Laducer, received a first prize of laptop computer in oral competition at the American Indian Higher Education Consortium (AIHEC) conference in April 1998 at Bismarck, ND, for his presentation on concrete. Another student, John Morin, received a third prize of $100 and TI-83 graphing calculator in the poster presentation category for his work on steel. Three students attended the American Indian Science and Engineering Society (AISES) conference in November, 1997, at Houston, TX. The experimental results were also presented by Dr. Karnawat at the American Society of Civil Engineering's national conference in San Diego, CA, in May 1998.

B. Evaluation and Assessment Activities

The evaluation of the project was done internally by the project staff. The progress of each student was measured on a regular basis through surveys, informal discussions, grades, and their participation and performance in mathematics, science, and engineering related subjects. Out of eight students, four have chosen to pursue their undergraduate degree in engineering fields demonstrates that the RISE project has made significant progress in achieving its short-term goals.

The RISE project was indirectly evaluated by the students' leadership roles reflected through their presentation on the project activities at the national conference and local science fairs. The students served as judges in local middle and high school mathematics and science fairs. They also helped TMCC disseminate information about its engineering program during the college awareness and tribal awareness days in the spring of 1998.

To evaluate the long-term goal of the RISE project, faculty members at four year schools track the students' progress after they transfer to their schools. The faculty members provide data on student retention rate and grades after RISE students finish their first and second semesters at the universities. The external evaluation continues until the students graduate from the respective university. This report will be submitted to NASA as data becomes available from the universities.

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Expenditures Summary

From 7/15/1998 to 7/14/1999

	NASA Requested (including prior year carryover)	Expenditures of NASA funds	NASA Balance (carryover to next year)	Institution expenditures (cost sharing)	Other funds expenditures
1. Direct Labor					
a. Salaries, wages					XXXXX
b. Fringe Benefits					XXXXX
2. Other Direct Costs					
a. Subcontracts					XXXXX
b. Consultants	$ 10,000	$ 10,000			XXXXX
c. Equipment	$ 3,000	$ 3,012			XXXXX
d. Supplies	$ 500	$ 461.76			XXXXX
e. Travel	$ 7,000	$ 4,242.37			XXXXX
f. Communication Costs (telephone, postage, printing)	$ 500	$ 22.50			XXXXX
5. Indirect Costs	$ 5,000	$ 5,000			XXXXX
6. Other Applicable Costs					
a. Student Stipends	$ 4,000	$ 4,000			XXXXX
5. Total Expenditures	$ 30,000	**$ 26,738.63**			

Funds Awarded = $ 29,335 *(see "This Action" in item 8 of the Award Letter)*
Funds Expensed = $ 26,738.63 *(actual expenses during the Award Period)*

A. Narrative Report - Project Period: From 7/15/1998 to 7/14/1999

Recruitment of students for RISE project started in the fall of 1998. The students from the last year's program were encouraged to participate in this year's activities. All the students from the last year's program except Patrick Belgarde were either transferred to universities or in the process of transferring to universities after the fall semester. Therefore, we recruited many incoming freshman students. Fifteen students were selected to participate in the program. Twelve students successfully completed project activities and received stipends for their participation at the end of summer 1999. All the students were Native Americans completing their sophomore or freshman year at Turtle Mountain Community College. Names of the twelve students are as follows:

1. Eric Smith
2. Mark Desjarlais
3. Ron Auth
4. Keya Azure
5. Derrick Grant
6. Wade Renault
7. Jessica Poitra
8. Tyson Peltier
9. Allan Morin
10. Patrick Belgarde
11. LeRoy Grant
12. Shannon Hajicek

All of the above students are interested in pursuing their four-year degrees in either engineering or computer science disciplines. They plan to transfer to North Dakota State University, University of North Dakota, or Minot State University after they graduate from Turtle Mountain Community College with their associate degree. In particular, Eric Smith and Patrick Belgarde plan to get their secondary education degree from Minot State University in mathematics and science, and LeRoy Grant and Shannon Hajicek are interested in pursuing degrees in computer science.

RISE project was divided into two parts. The first part was conducted in the fall and spring semesters of 1998-99 academic year. During the first part, the students learned basics of computers, Internet, and database designs. Many of these sessions were held on-line via e-mail or discussion forums on the Internet. The second part of the course was conducted in the summer of 1999. Students met at Turtle Mountain Community College on eight Saturdays from 8:00 a.m. to 4:00 p.m. Project director, Dr. Karnawat, taught classes on Saturdays. Database designs, logical and physical modeling, relational databases, Structures Query Language (SQL), and careers in computer science and engineering were discussed in the summer.

To truly understand the connection between computer science principles and real-world applications, we placed the emphasis on the problem-solving process. Many of these problems came from people who we visited during our field trips to the local industries. In addition, to reinforce database concepts, the students attended guest lectures by computer science professionals and professors. The students learned to solve real-world problems by designing information systems that incorporates database models by using Oracle and Access software. The students created posters describing their designs of the database systems. The posters were displayed in the TMCC's student lounge.

B. Evaluation and Assessment Activities

The project was evaluated both internally and externally. Internal evaluation focused mainly on the students' attitudes towards mathematics, science, and engineering disciplines. The pre and post surveys were conducted to measure qualitatively students' interests or inclination towards these subjects. The post surveys gave clear indication that students were motivated to pursue four-year degrees as result of RISE activities. External evaluation focused on students' continued interest in completing four-year degree program. We monitored students' progress in other classes at TMCC during the project period. To achieve the long term goal, we will continue to monitor how RISE students perform after they transfer to four-year universities. TMCC will keep record of student's progress for next five years and report the outcomes to NASA.