NDSU
GraSUS

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NDSU
GraSUS

North Dakota State University
Graduate-**S**tudent-**U**niversity-**S**chool
Collaborative for Science, Mathematics, Engineering and Technology

2001-Present

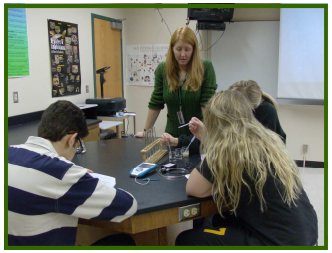
GraSUS

Mission

The goal of the NDSU GraSUS program is to enhance awareness, interest, and learning among Grades 6-12 students in the areas of science, technology, engineering and mathematics (STEM). The collaborative efforts of NDSU faculty, graduate and undergraduate fellows, and area math and science teachers will inspire future collegians to explore a post–secondary education in STEM studies.

Vision

Utilizing and expanding the partnerships of area employers and the surrounding community, the NDSU GraSUS program will be institutionalized and sustainable by the year 2010. We will continue to employ up to nine fellows, collaborate with 12-15 secondary teachers per semester, develop 45- 50 lessons/labs/presentations and impact approximately 2,000 students annually.



GraSUS Goals

- To enrich learning by science and mathematics students in Grades 6-12.
- To enhance communication and teaching skills of GraSUS fellows
- To provide professional development opportunities for middle and high school teachers
- To strengthen partnerships between NDSU and school districts
- To document project outcomes and inform others of the impact of GraSUS activities
- To incorporate GraSUS-II activities as an integral part of NDSU's STEM graduate programs

Future Goal

To permanently secure the GraSUS impacts to the university, school districts and surrounding community; and continue to impact science and mathematics education in the area.

Acknowledgements:

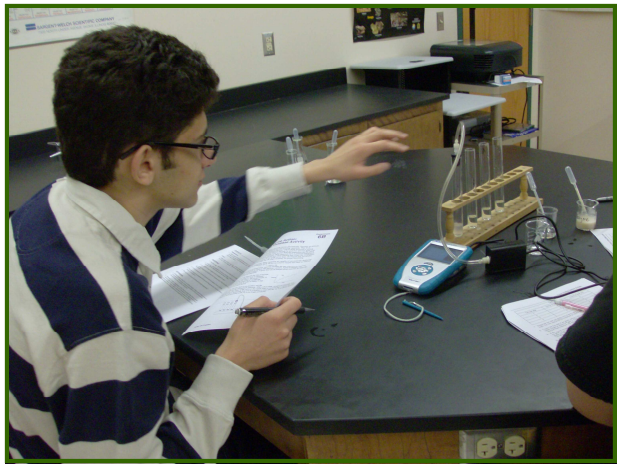
The NDSU GraSUS Project graciously acknowledges the support and participation of teachers and administrators in cooperating schools:

Agassiz Middle School
Ben Franklin Middle School
Central Cass High School
Discovery Middle School
Fargo North High School
Fargo South High School
Fargo South Campus II
Kindred High School
Moorhead High School
Moorhead Horizon Middle School
West Fargo High School
West Fargo Sheyenne 9th Grade Center

GraSUS-II is supported by the GK-12 program of the National Science Foundation (Project #DGE-0338128) and by North Dakota State University and The Center for Science and Mathematics Education.

Benefits and Impact for Community:

•Collaboration opportunity among university faculty and secondary school educators
•Educating well informed and involved future citizens
•Increased understanding of K-12 system by all involved parties
•Opportunity to reflect and collaborate on issues in teaching and learning
•Better understanding of the interaction amongst STEM faculty and area business and industry leaders in addressing enhancing education in area schools and retention of graduates in F-M community
•Opportunity for outreach and community service by all involved parties
•Opportunity to inform local schools about university, particularly NDSU programs



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Benefits and Impact for Students in Grades 6-12:

•Exposure to latest cutting-edge science and mathematics content and best practices in teaching
•Tutorial help from graduate or undergraduate students who serve as role models

Results:

•Each year 75-100 classroom units and projects were developed and implemented
•Each year more than 2000 students in grades 6-12 received project services
•90% of students surveyed report improvement in their science and mathematics knowledge
•100% of the teachers surveyed report that their students showed enthusiasm about the lessons/ activities and that these activities are helping to increase students' learning and their abilities to solve problems

Broader future impact:

•Increase in students' understanding of science and mathematics and quantitative literacy
•Future citizens who are well versed and literate in science, mathematics and technology

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Benefits and Impact for Area Teachers:

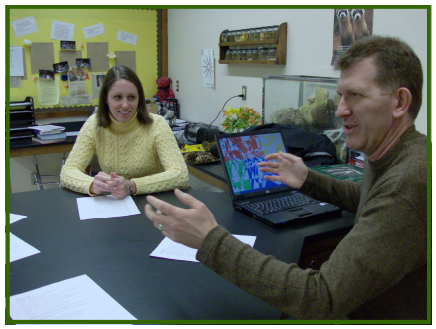
•Enhanced professional development, exposure to enhanced content knowledge, opportunities to reflect on teaching and learning
•Unit/project development for classroom use
•Opportunity to work with NDSU STEM and Ed. Faculty, graduate and undergraduate students
•Opportunity to use NDSU facilities and receive equipment support
•Networking opportunity with other educators in the area
•Joint research opportunity with NDSU faculty and area teachers
•Development of leadership skills

Results:

•Each year more than 20 teachers in area schools received project services; some of these teachers received graduate credit
•Teachers worked with 35-40 NDSU science and mathematics faculty each year
•85-90% of teachers surveyed report improvement in their content knowledge and professional development gain.
Broader future impact:
•Well-prepared cadre of teachers in science and mathematics in area secondary schools

•Receiving year-long and continual professional development

•Working with NDSU faculty and other educators to conduct research in mathematics and science education



Benefits and Impact for STEM Graduate and Undergraduate Students:

•Improved ability to communicate their mathematics and science knowledge to others
•Understanding of and appreciation for secondary school system
•Collaboration with teachers and faculty in developing new materials
•Experience in unifying their discipline content knowledge with pedagogy
•Receiving mentorship from project leadership
•Better preparation for their intended career
•Reflection on their teaching and learning
•Enhance teaching skills

Results:

•Each year more than 12-18 NDSU STEM students worked with area teachers
•100% of the STEM students surveyed report learning a great deal about teaching and student learning in science or mathematics
•100% of STEM students surveyed report their ability to communicate with students is improving through their GraSUS experience
•Better STEM teaching professors
Broader future impact:
•Future scientists/engineers/educators who are well-prepared in applying and communicating science and mathematics
•Future scientists/engineers/educators who are cognizant of the workings and issues of the secondary school system
•Future parents who will engage in their children's education and schools in tangible ways