

SUNRISE: Schools, University 'N' (and) Resources In the Sciences and Engineering

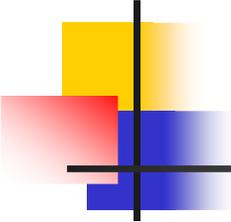
A NSF/GMU GK-12 Fellows Project

2007-2012



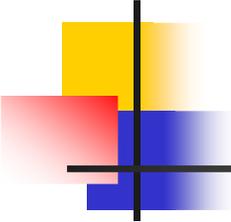
Welcome to the
FELLOW-TEACHER INTRODUCTION MEETING
August 21, 2007
2:30PM-4:30PM





Agenda

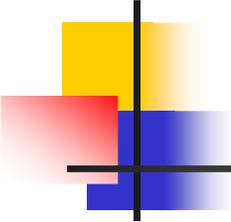
- Participant Introduction
- About the NSF GK-12 program
- SUNRISE program
- Questions and Answers
- Fellow-Teacher Group Discussion



Participants and Introduction

- GMU
- FCPS
- ACPS
- MPCS
- Program Evaluator
- Project Manager
- International Collaborator
- Advisory Board

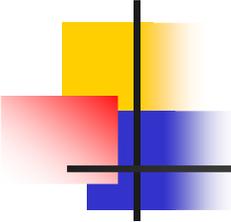
See handout



NSF GK-12 “Program’s Drive”

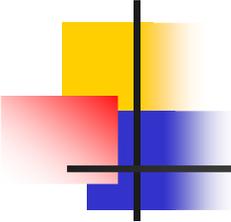
- “ The National Science Foundation (NSF) Graduate Teaching Fellows in K-12 Education (GK-12) program recognizes that graduates of higher education programs in science, technology, engineering, and mathematics (STEM) can contribute to the national effort to address the challenging issues in K-12 education across a broad spectrum of schools and educational levels. In particular, STEM graduate students can partner with K-12 teachers to work towards improving the content of science and mathematics taught in their classes and contribute toward the improvement of the nation's educational enterprise ”

-Excerpt from NSF GK-12 Program Solicitation



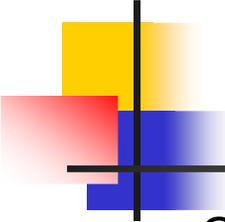
Expectations of GK-12 Program

- Promote strong partnerships between institutions of higher education and local school divisions
- Improve communication and teaching/pedagogical skills for the Fellows
- Enrich K-12 student appreciation for STEM, and their skills and knowledge in STEM
- Science Content knowledge gain and professional development opportunities for GK-12 Teachers
- Promote the adoption of GK-12 like activities as an integral part of graduate programs in STEM



Current Project Status

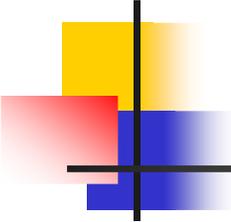
- Over 200 GK-12 sites funded by NSF till 2007 in the United States in 140 Universities
 - ***Active site in Virginia***
GMU
 - ***Inactive site***
Old Dominion Univ, Norfolk
- <http://www.nsfgk12.org/>
- <http://sunrise.ite.gmu.edu/>



Role of the Fellows

GK-12 Fellows, will work directly with GK-12 Teachers in and out of the classroom to:

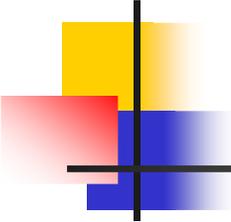
- Connect K-12 learning to scientific methods needed for further study in STEM disciplines;
- Serve as role models for K12 Children who are our future STEM professionals;
- Support GK-12 Teachers with content knowledge in both mathematics and the sciences;
- Jointly enhance and deliver K-12 science and mathematics instruction- hands on experiments
- Serve as resources for teachers in conducting hands-on experiments
- Help provide individualized instruction/assistance to the students
- Support in sustaining the improvement of nation's educational enterprise



Role of the Teachers

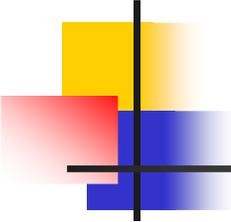
GK-12 Teachers will work directly with GK-12 Fellows in and out of the classroom to:

- help improve the communication and teaching-related skills (pedagogy) of the GK-12 Fellows
- jointly design and deliver enriched K-12 science and mathematics instruction
- infuse interest and appreciation for STEM among K-12 students
- support in sustaining the improvement of nation's educational enterprise



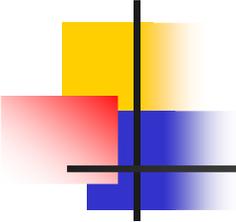
Benefits to Fellows

- Unique opportunity to work with the PIs, teachers, and the children to develop and their skills in pedagogy, communication, and classroom management
- ★ Encourage the Fellows to consider academia/school as a viable professional option upon the completion of their STEM education
- ★ For those Fellows not intending to be in academia, the experiences will help develop better communication, interpersonal, and social skills that will serve them well throughout their professional careers



Benefits to the K-12 Education

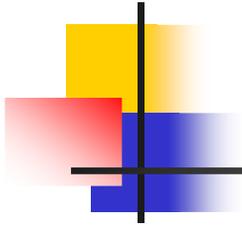
- Offers professional development for the teachers
- Increased interest in STEM among K-12 Children
- Access to GMU research
 - Research Experience for Teachers in Summer (being planned)
- Opportunity to strengthen science content knowledge



Last, but by no means least...

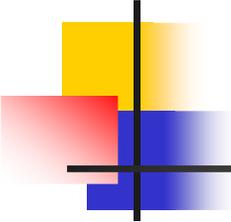
Benefits to GMU

The opportunities and excitement of this project will serve as the foundation for additional activities that would allow GMU to become a nationally recognized leader in the infusion of STEM content knowledge into K-12 education.



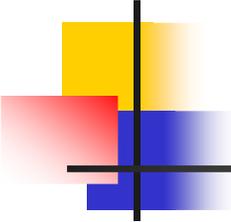
To sum up....

- This is an opportunity to enhance interests in STEM among K-12 students
- Its also an opportunity for professional development for everyone involved in this project
- Finally, its an opportunity to improve the nation's educational enterprise. In the long run....More Engineers, Doctors and Scientists



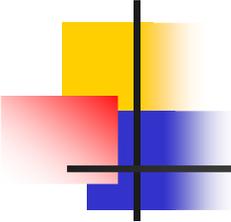
SUNRISE: A NSF/GMU GK-12 Project

- **Mission:** To infuse Information Technology rich STEM concepts into the Grade 4 to 6 School Curriculum
- Existing Curriculum enrichment (90% of the time)
- New curriculum (Suggested topics): GPS, Space science, oceanography, circuits, simulation, protein synthesis
 - Will be tied with the SOL
 - Jointly prepared by Fellow and Teacher
 - Watered-down to the grade level



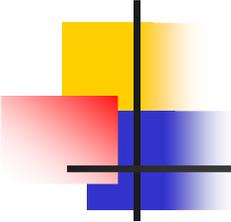
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- Fellow Training and Preparation
- School Standards, Virginia Science and Math SOLs
- Fellows spend 10 hrs/wk in classroom with teachers
- 5 hr/wk for preparation
- Teacher and Fellow spend 1-2 hours discussing the topics and the planning needed for the following week
- Fellows are never alone in a classroom. They only assist. They are not Education Majors
- It is expected that teachers adopt the enriched curriculum in the long run
- Enriched lessons will be made available on our website



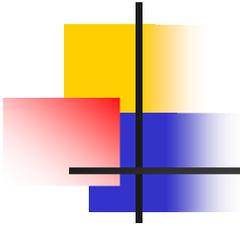
SUNRISE

- Participation in surveys
- Measuring the impact of the program
- Fellows assist with science days, judging science fairs, Olympiads etc.
- Fellows can also Guest Lecture in another teacher's class
- Conference travel
- Publications

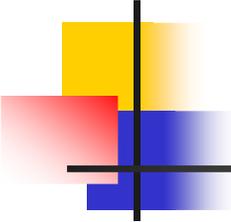


SUNRISE- International Component

- Dr. Laura Martignon, The Institut für Mathematik und Informatik in Ludwigsburg, Germany
- Implementation to start in Spring 2008
- Video Conference via web using Network EducationWare (NEW) developed by GMU's C4I
- Motivate and create an enthusiasm among K-12 students for learning science via international communication.
- Understand science and math learning by communicating with others in different localities and from different cultures. Mathematics is the universal language and science is a universal enterprise with mathematics as its language.
- Observe teaching outcomes in both countries and compare similarities and differences, and relate them to cultural similarities and differences.

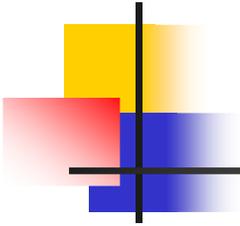


Questions ?



Fellow-Teacher Discussion

- Exchange Background, Contacts
- What do you teach/research, how and when?
- Who are the other teachers at grade 4, 5 and 6
- How can our time be spent productively?
- Resources at schools: supplies/kits, laptop/projector, books, internet in class, computer labs.
- Expertise of Fellows
- Formalities: ID cards, parking, introduction to other teachers, principal
- Work out a time to meet before Labor Day at school
- Work out the 10 hr/wk schedule



Thank You for your participation and
support!