Getting Started with Partnerships
First International Teacher-Scientist Partnership Conference

Margery K. Anderson, Ph.D. / Science Education and Strategic Communications
Walter Reed Army Institute of Research / 503 Robert Grant Ave., Bldg. 503, 1A22
Silver Spring, MD 20910-7500 / Office: 301-319-3022 / Fax: 301-319-3194 /
margery.k.anderson.ctr@us.army.mil

David W. Neagley
Science Teacher Coordinator / Department Chair at Northwestern High School Program Manager for Curriculum & Instruction Professional Development Facilitator for Office of Talent & Development
7000 Adelphi Road / Hyattsville, MD 20782 / David.Neagley@pgcps.org

The Walter Reed Army Institute of Research (WRAIR) Office of Science Education and Strategic Communication and Northwestern High School, Prince George's County Public School, have designed and implemented a STEM educational program that integrates interdisciplinary, hand-on, guided inquiry-based enrichment learning models that support core instruction. This program utilizes both scientists and undergraduate and graduate students termed near-peer mentors. Near-peer mentors act as lab instructors, subject matter experts, role models for academic success, curriculum designers, lab safety officers, technicians in WRAIR research labs, and some have authored both educational and research publications. In conjunction with supervising scientists, they deliver hands-on, inquiry-based STEM modules to students, offer educational and career-based guidance, build supportive relationships with students, and encourage students to pursue their goals.

School Selection:

- What are your goals
  - Guest lecturer
  - Sponsor an activity such as science fair: supply judges, online mentors, equip, internship, sponsor a student, a professional development lesson
  - Do a lab demo or experiment: involves working with a teacher prior to students – This is the show and tell model and is a favorite with teachers and schools
  - Combining scientists and surrogates: Near-peer mentor model – have regular contact with teachers and students for an academic year
  - Professional Development only
- Budget Determinations
  - Low resource schools have greater impact on STEM literacy but limited materials, You may purchase from your funds or loan equipment.
- School advocate
  - Someone within the hierarchy who is willing to make introductions, and who schedules and monitors accountability
  - Someone willing to risk losing a "facts for assessment day" to a lab or speaker day
- Targeted Classes
  - Complete a needs assessment. Both aspects of the partnership should be considered. Where does your area of expertise fit? Look at the curriculum and the age in which your discipline will be assessed. Your skills should enrich assessment and school mission.
- Flexibility
  - Schools and classrooms are neither labs nor industry. They have their own goals. You must collaborate within the curricular framework and student schedule.
  - Teachers are rarely given independence in classroom topics. You fit to them.

- It is best to schedule over a year with activities linked to the units.

Program Design

- Curriculum Development
  - Assessment of your purpose and available resources
  - Suggest a scientist and student-scientist team. A student scientist or near-peer mentor is an undergraduate/ post-baccalaureate student in the research lab who devotes part of their time to educational outreach.
    - Supervised by the senior scientist
    - Co-teaches with the scientist and may return for the follow-up
    - Assists in writing the investigations based on current lab research
    - Works directly with small groups of students
    - Intermediary with the teacher and scientist/facility
  - A scientist and near-peer mentor should enrich or augment available hands-on activities in local schools
  - Labs/lessons are based on your supply budget and purchasing power – Your consideration is after a local review of available resources.
  - Local demographics and student achievement will determine degree of difficulty and suitable activities

Participating teachers and schools

Scientists receive many requests to visit, speak, sponsor, lead. You will need to choose.

- Time commitment
  - Will the school support the extra-curricular time with space and lab equipment
  - Is there a supervising teacher or are you "on" when a substitute is there
  - Will the teacher prepare the students with necessary content knowledge
- Laboratory-based activity will require:
  - Benches/tables – impermeable surfaces
  - Safety measures in place with training capability
- Site Capacity
  - Class size and level
  - Can you spend a day or only an hour

Near-peer Mentors in the Classroom

- Should be representative of local/standard demographics for ethnicity/race/gender
- Should have lab experience in scientist's lab or from university. Frequently science education majors will volunteer. Can be a young lab technician from the science lab.
- Should have basic teaching skills and enthusiasm
- Local university and other collaborations should be used to engage local college applicants for near-peer mentor positions that frequently become summer lab positions.
- If possible, pay them for travel expenses

Evaluation and Assessment

- Evaluating without the requirement for a human use protocol
- Options for evaluation
  - Attitude surveys
  - Knowledge-content surveys
  - Skills and practice surveys
  - Scientific thought and practice versus facts and assessment
  - Recommend a published, validated, reliable measure in public domain.