PUTTING THE TEACHER SCHOLAR PARTNERSHIP PIECES TOGETHER

What characterizes a Teacher Scholar Partnership?

Partnerships are made or broken by the careful selection of members, shared vision setting, consistent investment of time and effort, and constant reflection by all partners on the partnership goals and progress toward realizing them. Throughout the formation and life of a partnership, attention must be devoted to nurturing compatible, trusting and committed relationships among all members.

Benefits in the Teacher Scholar Program include developing better community relations between higher education and K-12 institutions, discovering if this is the "right" career choice by the scholars, learning among participants about "inquiry" methods to use in the classroom, receiving monetary compensation, and having access to science materials and expertise in the K-12 classrooms. Each member of the partnership should receive benefits. It is also important to define expectations of individual members. This can be done with a written contract or written requirements for individual partners.

- The Teacher Scholar contract might include the schedule of professional workshops and meetings; hours to be spent in the classroom or planning; and written submissions of reflections.
- K-12 and college mentor's contracts can reflect the frequency of interactions with scholars, frequency of ongoing assessments and attendance at professional development workshops or monthly meetings.
- Teacher Scholar Leaders coordinate professional development and monthly meetings, facilitate and monitor interactions and progress between Scholars and mentors, and coordinate program assessments.

What do I need to get started?

Great flexibility is possible, and the minimum requirements are surprisingly few. To begin, a partnership needs at least two leaders, one from a college and one from a K-12 school, with a shared vision of how a partnership can benefit local K-16 science and mathematics education. Within each of these institutions, administrative support is necessary. Ideally TSP involvement is viewed as a desirable asset in the tenure and promotion process for college faculty, and a valuable professional endeavor for K-12 teachers.

In addition, a partnership requires team members with expertise in mathematics and science content knowledge (often provided by college science and mathematics faculty) and science and mathematics pedagogical knowledge (often provided by college education faculty and/or K-12 teachers). Additional members will need to assume responsibility for preparing and overseeing the teacher scholars for working in the schools.
How are participants recruited?

The most successful technique to recruit high quality applicants is the solicitation of names from college science and mathematics faculty. Often these professors identify students who otherwise might not take notice of the program or think seriously about applying. Many students feel honored to receive a personal letter explaining their nomination as a TSP applicant. Teacher scholars are also recruited with posters, announcements publicizing TSP, and e-mailings to departmental lists of science and mathematics majors.

Helpful places to recruit other partnership members are existing collaborations in other college projects (e.g., funded by the National Science Foundation, National Aeronautics and Space Administration, Department of Education, Howard Hughes Institute of Medicine or other funding), civic engagement (service learning) project partners, or outstanding partners from student teaching sites. These successful prior relationships are fertile grounds for developing or expanding higher-ed/ K-12 partnerships. Prior relationships may also give you an idea of how receptive partners are to the goals and challenges of this program.

Can partnerships work without a teacher-certification program?

Yes, TSPs can function alongside or in conjunction with certification programs as well as in colleges without any such program. Similarly, TSPs can take place in public, private, urban, suburban, or rural schools that are committed to the goals of the program and are willing to dedicate staff time and resources to its implementation. In any case, partners must provide the program with pedagogical knowledge and science and/or mathematical content knowledge.

What preparation do the partners need as an introduction or orientation to the program?

The purpose of the preparation is to help the partners get to know each other, work and communicate effectively, and understand the purpose of the program. Preparation can be accomplished in a variety of ways. Whether it was done during 1-2 day orientations for all participants, or weekly meetings for Scholars over the course of the semester, this preparation generally focused on the following topics:

- What is inquiry? How do we understand it individually? As a community?
- How does the inquiry approach benefit math and science learning?
- What is the context for inquiry in our local schools? (e.g., local, state, and national standards; curriculum for the classroom teachers)?
- What are ways that teachers, Scholars and university faculty can work together?
- How does the teacher scholar get started in schools? (e.g., professional behaviors such as dress, maintaining communication with teacher, relationships with K-12 students)?
- What are the specific requirements/commitments to the program?

What activities support participants as they work together?

A talented, educated and motivated college student may seem to be an easy person to integrate into K-12 classroom instruction; in the busy life of the teacher, implementation may be more complicated. This process is most successful when the teachers and Scholars understand and agree with each other’s expectations, and have compatible schedules and content interests. To accomplish this, some teachers interview Scholars individually. Some programs hold initial dinners in which teachers briefly explain their interests and expectations for the benefit of the Scholars. Other examples of ways TSP programs structure this process include:

- Scholars use standards-aligned curricular resources for inquiry, teaching and learning. Existing exemplary materials help Scholars gain a sense of what is developmentally appropriate for the K-12 students with whom they are working.
PUTTING THE TEACHER SCHOLAR PARTNERSHIP PIECES TOGETHER

• Scholar and teacher mentor select activities from a list that allows a Scholar to gradually take on increased responsibilities in the classroom. Scholar and teacher agree upon the timeline and types of activities assumed as Scholar gains confidence and skills. For example, Scholar may begin with getting to know K-12 students by answering questions during labs or lead parts of a lesson. Scholar eventually conducts a full lesson and assesses student understanding of it.

• Scholar develops and teaches a lesson assigned by the classroom teacher (for example, create a guide to investigate different parts of a school nature trail).

• Scholar teaches a certain number of inquiry lessons by a particular date, perhaps 1-3 inquiry lessons by the end of the first semester.

• Scholar, teacher mentor, and faculty mentor hold regular, informal meetings to debrief activities and discuss upcoming ones.

• Informal pizza and soda meetings in various locations allow partners to plan inquiry work, partners to plan inquiry work, relax informally with one another, and allow all to see each other’s work settings.

• Common work time (20-45 minutes) set aside for partners to meet and talk with each other during monthly or other regular large group meetings.

• Online communication regarding an upcoming inquiry project.

What activities help partners develop their knowledge of K-12 science and mathematics content?

As with professional mathematical and scientific communities, activities within a community of learners best promote knowledge development about K-12 mathematics and science education. Relationships are key to facilitating these exchanges because they build trust, interest, motivation and enjoyment. Activities include:

• Trying out inquiry activities together and discussing the development of content understanding.

• Hearing from teacher or faculty member on topics of mathematics or science content.

• Inviting speakers to discuss mathematical and science educational reform or inquiry issues.

• Partners sharing what they achieved in classrooms

• College or university faculty sharing ways they develop inquiry skills with college students, how they developed their own inquiry skills and what the common difficulties or successes seem to be.

Programs often embedded in these discussions in regular dinner meetings scheduled for a time when all participants could attend. Since relationships are key to facilitating these exchanges, these gatherings did not need to be fancy or expensive, but rather comfortable and collegial, allowing for conversational time and collegial sharing of ideas and concerns.

What activities facilitate reflection?

Reflection is critical in construction of pedagogical content knowledge about teaching K-12 mathematics or science. Some specific activities that projects found successful for achieving this were:

• Online interactive software that supports dialogue and reflection.

• Analysis and discussion of regular feedback from teachers and K-12 students.

• Prompts for journal entries.

• Creation of portfolios (including revised copies of lessons developed, reflections on lessons taught, sample K-12 student work, pictures of work with students, etc.).
PUTTING THE TEACHER SCHOLAR PARTNERSHIP PIECES TOGETHER

• Visiting each other’s classrooms or being paired with another scholar in classrooms.
• Analyzing teacher mentor’s teaching as a model.

What formative and summative assessment strategies are available?

Teacher Scholar Partnerships employ a variety of strategies to document the effect of the program on Scholars, K-12 student outcomes and developing a sustainable program within the college. All members play roles in assessing program outcomes.

Assessment of the Teacher Scholar Partnership includes:

• Ongoing conversations with Scholars, K-12 teachers and college mentors about program elements.
• Focus group discussions with college mentors and administrators, and K-12 administrators and mentors on the feasibility of future collaborations and development of joint funding proposals.
• Exploring multiple ways to institutionalize a Teacher Scholar Partnership.

How can Teacher Scholar Partnerships be sustained?

Partnerships are institutionalized when long-term structural changes are established by the higher education partners. These may take many forms, and there needs to be demonstrated value to the partners. For example, college students might receive credit for exploring teaching, classroom teachers add to their lesson repertoire with each new Scholar, and faculty mentors gain access to K-12 classrooms for their own students to engage in an authentic teaching-learning tasks. Programs can be sustained through:

• An independent or honors independent study guided by various faculty in collaboration with a classroom teacher.
• A service learning course offered as part of an institution’s civic engagement commitment.

Possible formats include:

• One semester independent course that students may continue on their own once the relationship with a classroom teacher is set established.
• One semester course to train scholars who participate (refine skills & knowledge, mentor new Scholars, etc.) during subsequent semesters as work study students.
• Beginning course and advanced course to allow students to participate the full academic year.
• As an introductory mathematics or science education course.
• As an applied mathematics or science course in which K-12 teaching experience is embedded as an authentic task that tests the skills and knowledge of mathematics or science.

Efforts toward sustainability must take into account the institution’s need for documented evaluation of the program’s value:

• Partners should keep in mind basic costs of sustainability.
• Teacher scholar stipends.
• Program leader stipends.
• Travel reimbursement for scholars, for example if extended travel to rural K-12 schools is involved.
• Equipment, materials, or fieldtrip money for inquiry projects or other curricular resources.
• Regular dinner meetings.
PUTTING THE TEACHER SCHOLAR PARTNERSHIP PIECES TOGETHER

How did TSP programs celebrate their work?

Celebration is a way to honor the community by acknowledging its members, efforts and achievements. It completes a cycle in community and relationship building and may benefit the project as a way to bring a semester, year, or project to a close. The programs found many unique and individual ways to celebrate their successes and bring closure, including:

- An end-of-year dinner which invites parents, principals, and superintendents as well as TSP participants.
- Presentation of teacher scholars’ classroom work by displaying portfolios and/or posters with photos of their work with students.
- Poster session of K-12 students’ inquiry projects for parents, students, school staff, and TSP college partners.
- An “Awards Night” for presenting certificates of participation and humorous citations for their activity and learning during the project.
- Letters to school administrators acknowledging their teachers' participation.
- Local news releases including photos of final dinner celebrations, stories of poster sessions, and announcements of future opportunities.

What does a TSP cost?

Beyond the opportunity to make a difference in a K-12 classroom and learn from this opportunity, incentives for recruiting teacher scholars can take many forms: monetary stipends of up to $2000 per year, independent-study academic credit, work-study allocation, and fulfillment of service-learning requirements.

Each of the eight ICO programs had budgets of $15,000 annually for two years. Some ran their entire program - from dinner meetings to participant stipends to project leaders salaries - on this amount. The bulk of the funds were devoted to teacher-scholar stipends, and the amount that went as stipends to project leaders varied in accordance with how many other demands were being made on the their time. Others supplemented their budgets with a variety of institutional funds.

What are the benefits of a Teacher Scholar Partnership?

Many benefits, some intended and some unexpected, were realized by all members of the partnerships. Unexpected benefits are evidence of authentic partnerships that are responsive to individual member’s needs and changing circumstances.

Benefits to the Teacher Scholars

The major benefit of this program to the undergraduate teacher scholar is the opportunity to "try on" teaching within an authentic learning environment. Such an experience allows scholars to be better informed about choosing a K-12 teaching career.

The TSP program also works well for undergraduates who are weighing several career options but do not have the time or financial resources to pursue more than one option. The experience broadens scholars' awareness of what teachers do and do not do and tests many of their own ideas about themselves as teachers. Scholars may discover their gift for teaching through the experience and choose to pursue a teaching career. While not all scholars will be successful in teaching all lessons with all students, the experience gives them a realistic picture of their teaching, organizational, and interpersonal skills.

Other benefits to scholars are:

- Improved collaboration skills.
- Increased conceptual understanding of their content area because of teaching.
- Improved communication skills to reach students at different levels.
- Increased understanding of needs of diverse learners in a K-12 school (English Language Learners, students at different motivational levels).
- Greater understanding of their own learning style and that of the students they are teaching.
- Increased understanding of reform-aligned science and mathematics curricula and resources.
- Acquiring new teaching and classroom management strategies from K-12 mentor teachers.
- Adding a "real-world, real-work" experience to their resume in preparation for a job search or admission to an advanced degree program.
PUTTING THE TEACHER SCHOLAR PARTNERSHIP PIECES TOGETHER

Even if scholars choose not to become teachers, their knowledge of the school system will benefit them and their community as voters, community members and leaders.

**Benefits to the Colleges**

Liberal arts colleges and many other academic institutions have a long tradition of serving the local community both academically and as good neighbors. The Teacher Scholar Program provides an opportunity for a college to strengthen its relationship with the community by increasing the civic engagement of its students and graduates. Programs ideally enable students to become tomorrow’s community leaders. With a relatively small financial commitment, the college can provide rich leadership and learning opportunities for mathematics and science undergraduates. TSP programs can also enhance the opportunities of a college to:

- Leverage funds from other funding sources (e.g., NSF, NASA, Howard Hughes Medical Institute, etc.) in the development of new community partners for future grant projects.
- Bring together faculty from education, mathematics and science departments in a unique and successful collaborative effort through courses, research, and other cross-disciplinary projects.

**Benefits to the K-12 Teachers**

Teachers who hosted the scholars benefit from becoming part of a professional learning community. Teaching in K-12 classrooms is a challenging and often isolating experience. Teachers are attracted to the program by the opportunity for assistance with tasks such as managing complex science projects, giving their students individual attention, and planning learning experiences in content areas in which they felt inexperienced or unprepared. Interaction with enthusiastic novices is refreshing. Guiding scholar’s learning is personally and professionally rewarding to them. Teachers gain new knowledge about content and effective learning strategies from their Scholars, college faculty and their peers. Many feel empowered to take risks and succeeded in making significant improvements in their teaching practice in areas that they had been contemplating but previously had lacked support and resources.

Additional benefits include:

- Use of innovative reform-aligned instructional materials.
- Access to college resources and facilities.
- Time and opportunities to meet with their peers.

**Benefits to the Students**

Scholars provide a powerful role model and mentor for the K-12 students. Mathematics and science learning is often obstructed by negative attitudes toward the subjects themselves or the challenges provided by some of the more abstract or complex concepts. “Why do I need to learn this?” is a common refrain. Scholars communicate enthusiasm for both the subject matter and learning in general that can be motivating and inspiring. Their relative closeness in age, possible common interests, and fresh approaches enrich and complement the teacher’s efforts in meeting the needs of individual students and encouraging their perseverance in learning. The comments and examples given by Scholars can directly illustrate the purpose and benefits of learning mathematics and science, as well as the value of overall academic achievement. Teacher scholars also provide practical advice and encouragement to students in attending college. The interactions between the Scholars and the students often broaden the cultural, educational, and social experiences of everyone involved, making this experience an integral part of a liberal arts education.

*Additional benefits include:

- Direct coaching and mentoring by a scholar.
- Opportunities to participate in more complex or challenging activities.
- Exposure to varied teaching styles.