REPORT ON MIT TEACHER TRAINING SEMINAR IN WASHINGTON, DC

Prepared by Dr. Kenneth Gordon, Chair of the K-12 initiative for the MIT Club of Washington, DC.

On March 19, 2014 the MIT Club of Washington DC held a one-day event for STEM teachers at NASA Goddard Space Flight Center in Greenbelt, MD. This is a report of lessons learned from organizing that event that might help others organize similar events in the future.

For over 20 years MIT has held a week-long program in Cambridge MA in late June called Science and Engineering Program for Teachers (SEPT). For the last two years the MIT Club of Washington sponsored three local teachers to attend that program. But each year SEPT only can accommodate about 30 teachers from around the US- a very limited number. To benefit a larger number of teachers there have been discussions on organizing regional versions of SEPT, but it was never attempted. This year the MIT Club of Washington decided to do so. The motivation grew out recognition that its other activities to support STEM students (awards at science fairs, inspiring speakers at schools) were only able to reach a small percentage of the students in local schools, but significant leverage could be obtained by directly supporting teachers. We initiated this local event as an experiment, for the benefit of teachers and for MIT.

MISSION: The mission of SEPT has always been to expose the STEM teachers to part of the exciting cutting-edge research at MIT with the hope they can improve their scientific knowledge, and take some ideas back to their classrooms and hence benefit their students. The mission of the regional event is the same, on a smaller scale, and not necessarily focusing on research at MIT.

VENUE: A critical element for a local meeting is finding a location to host the event- at MIT this is not a problem. I believe teachers are drawn to attend and benefit greatly if the event, like the SEPT program at MIT, can include visits to laboratories where research is being done (a sort of hands-on element). That means a venue at a University, Government laboratory, or corporate research facility. As always a MIT Club must capitalize on the strengths of its location. For Washington this means the several Federal research laboratories in our area (several of which have desires or programs to support STEM education). Through our alum contacts we identified the NASA Goddard Visitor Center. This facility had the advantages of being outside the security fence of Goddard, having a suitable auditorium, and containing many space-related exhibits for the teachers to view. Our initial efforts aimed at a January event were delayed by NASA budget reductions and a government shutdown, but eventually a March date was finalized. The arrangement was that the Visitor Center would host the event, but the Club had to design and manage the program (invite speakers, provide lunch, advertise to teachers, accept registrations, contract for a bus, etc.) Future events in Washington could focus on NIH, NIST, or other agency laboratories.

FUNDING: From the beginning we wanted to not charge the teachers any fee to attend. However, depending on the situation, there are likely to be expenditures the Club must provide for. In our case, the significant costs were bringing in box lunches for the participants, and hiring a bus to shuttle teachers for the tours among the many buildings of Goddard. At first we also expected travel costs for MIT speakers might be needed, but that did not materialize. These marginal costs may only amount to $1000-2000, but they must be covered by the Club or obtained from outside sponsors. The MIT Club of Washington had previously sought and received a grant from Northrop Grumman to support its K-12 STEM activities, and I was able to increase it this year to cover the costs of this new program. Many
corporations now are willing, if not excited, to support STEM education, so I recommend other MIT Clubs seek this source of sponsorship.

**PROGRAM:** The program designed for the teacher event consisted of three hour-long talks (including questions) by senior NASA scientists from Goddard, lunch, and two hours of tours of NASA laboratories. Registration started at 8:45, the program at 9:00, lunch at 12:15, tours from 1-3, and dismissal at 3:30. Networking was encouraged during lunch and at the end. SEPT declined to include these teachers in its NEST network of past teacher participants, so no formal network is planned. Originally I planned on one speaker from the MIT faculty to reinforce the connection to MIT and the SEPT program. I invited five MIT Professors to be speakers, but all declined for one reason or another (they have other priorities). I think this is an important lesson for organizers from other MIT Clubs- count on local speakers. In our case it was obvious that scientists from NASA were the sensible source. I focused on the research areas in which Goddard specialized- namely climate change, astrophysics, and remote sensing from satellites. Just before lunch I added a 20 minute description of educational support NASA offers teachers to help in their classrooms- e.g. educational modules for classroom use and student tours of laboratories. This turned out to be particularly well received by the teachers.

**PUBLICITY:** From our past experience we knew that informing local STEM teachers about the event would be a problem, since there is no central channel to reach teachers. In our case there are over 7 school districts spread over three states-- the District of Columbia, Virginia, and Maryland. We used both a top-down and bottom-up approach. We sent our invitation (via e-mail) to district school officials and STEM coordinators wherever they could be identified (usually from web sites). In addition we sent it to individual schools where we had contacts from providing inspiring speakers the last several years. We also sent a notice to all local MIT alumni asking them to spread the invitations among the teachers their children attended (helped a lot). Another very effective method was to send the invitation for distribution among local members to two relevant teacher organizations- namely the Association of Physics Teachers and the National Science Teachers Association. I recommend a Club be clever and send invitations to all sources they can think of.

**PARTICIPATION:** Since this was a first-time experiment, I did not know if we would get 5, 15, or 50 teachers to attend. We had an upper limit of 40 because that was the maximum number NASA could take on the laboratory tours. We did require registration by e-mail, because we had to order sufficient food for lunch. We worried that teachers might have trouble getting release for a weekday event (we eliminated a weekend event because laboratories would not be open), even though this is certainly professional development. However, the registrations came in fairly soon, and a week prior to the event we reached our capacity and had to turn a few away. The Monday prior to our Wednesday event suffered a major snowstorm and schools were closed- and generated three cancelations (hard to plan for weather events). The audience was quite diverse- about half from middle schools and half high schools (one elementary school), distributed geographically (many from Maryland and Virginia, a few from DC), and about 22% male. All were classroom teachers, except one in charge of designing STEM professional development. About one third were from private or charter schools, and the rest from public schools. All feedback from teachers was positive, most were very appreciative of our efforts.

**CONCLUSIONS AND RECOMMENDATIONS:** A regional event built on the SEPT model is feasible, but a one-day event obviously must be limited in scope. MIT Clubs are encouraged to undertake this task, but should realize they will be responsible for all management details- they will be on their own. Strong
early attention should be given to determining a venue (and/or sponsorship), because that will
determine the capacity, and much of the program. Early attention also should be given to funding, since
there will be costs to cover. Seek to identify higher-level educational organizations (like teacher
associations) that can help reach teachers with invitations. Teacher feedback indicated they welcome
educational materials to take back to the classroom, but that is hard to do for an individual MIT Club. In
this case we were able to piggyback on NASA materials. MIT/SEPT could help by more directly providing
such materials/information to Clubs. All-in-all organizing a successful event of this type is very satisfying,
and a very worthwhile task for a MIT Club and alumni to undertake, and for the Alumni Association to
promote.