Silicon Valley Ad-Hoc Committee on Education in the Optical Sciences

An examination of grass-roots needs and entities to leverage for maximum return on effort and longevity.

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CPO Meeting 5/7/2000

History

- Topic came out of our 1998 annual meeting of the officers from SCV LEOS and N. Cal. OSA Chapters.
- Incorporated into our MOU in 1999.
- Identified key volunteer for lead role.
- Input requested via newsletter and chapter meetings.
- The subject of significant brainstorming among the officers and interested people in 1999 and 2000.
- Action item given in CPO meeting at Photonics West ’00.
- Announced and held two ad-hoc meetings:
  - Wyndham Hotel 4/19/00
  - Pelham Foundation 5/4/00
• Attended Ad-Hoc Meetings
  – SCV LEOS Officers
  – OSNC Officers, Stanford OSA Chapter Officers
  – San Jose High School District Science Coordinators
• Provided input, was not able to attend
  – San Jose State University & Laser Kit/Training Supplier
  – Local Chapter American Association of Physics Teachers
  – Local Chapter American Association of Engineering Societies
• Words of Encouragement
  – Paul Shumate, Tony Siegman, D.A.B. Miller, Aimee Gibbons…
• Missing
  – Other High-School Districts and Educational Entities
  – Local Non-Profit Foundations and Associated People
  – Local IEEE Section’s Pace and K-12 Officers.
  – Local undergraduate professors wanting to push optics.

**What we want to do**

• Many well-intentioned outreach programs have failed in the past. We want to make a sustainable program.
• Most foundations waste money. We want to be frugal.
• Use available resources (usually match local needs).
• We do not want to burn-out our volunteers.
• Build success by establishing local linkages.
• We want to create a strong “need to know” about optics and (insert favorite topic here) in high-school and undergraduate students.
• We want to encourage and facilitate students with interest.
• We want to establish metrics to evaluate our success.
• Not create another bureaucracy. Not enrich administrators.
Philosophy to Date

• Fiscally conservative & technically imaginative
• Maximum return for minimum effort
  – Volunteers have very limited time.
  – Assume we will have no paid staff.
  – Entities exist for distribution, content, monitoring, etc.
• “Exploratorium” rather than “SJ Science Museum” model
  – Low budget, low glitz, high robustness, high longevity.
  – Carefully crafted, objectively tested, and qualified content
  – Continuous improvement of content (the hard part)
• The Ad-Hoc should play a “matchmaker” type of role.
  – Connect teachers, content, distributors, volunteers, societies…
  – Scalable without major ad-hoc intervention
  – Eventually get involved only when a phone call is needed.

Philosophy, continued

• Create three lists for each location
  – List of needs, teachers, schools
  – List of distributors, non-profit service organizations
  – List of companies that encourage volunteerism
• Avoid rigorous approach, allow teachers options.
• Build a tradition of success, while increasing our equity and momentum.
• Philosophy is independent of location and discipline.
• Assume money is readily available locally.
• Identify and leverage existing outreach programs.
• Don’t re-invent the wheel

Of course this is an evolving philosophy and will change
Example of Philosophy

- Identify Needs
  - Silicon Valley school district science coordinators
- Identify Funding
  - National societies, local corporate and non-profit foundations
- Baseline Content, Fieldtrips, Video, CD-Rom
  - Local industries, academic, and government facilities
  - TBD for custom CD-Rom and video production
- Identify Distributor(s)
  - FOPAL for video and print media
  - RAFT for equipment loan and consumables
  - SVEC “Discover E” for presentations
- Commence Continuous Improvement
  - TBD for non-profit or consulting firm

Example Needs

- Needs will vary geographically and with time.
- Example from East Side S.J. High School District:
  - Consumables: Batteries, bulbs, paper towels, books, magazines
  - Tools: meters, reference materials, useful web sites, laser kits.
  - Learning: Speakers, tours, shadowing days, tradeshows, internships.
  - Volunteer: Ask-an-expert, mentoring, judging, science fair projects.
  - Training: Develop lesson plans using optics, optics videos
  - Grants: Fieldtrip, awards, sponsoring, Radio Shack, VWR Scientific
- Getting teachers comfortable with teaching optics.
- Some teachers will not use resources
- A master resource book would be most useful
- VHS Video and CD-Rom are preferred over the WWW.
Progress

• Explicit support from local chapter officers.
• Held several meetings, including with high school reps.
• Core of volunteers is “self-assembling”
• 28 people on ad-hoc email list.
• Found free, permanent meeting place
• Philosophy is solidifying, need input
• Generated a working document list of needs
• Generated preliminary list of optics tours & contacts.
• Working with SVEC to get list of companies.
• Identified 2 caches of optics journals to donate.

Proposals

• Create majordomos lists for local usage.
• Someone create a master list for nationwide resources in optical/physics education.
• Establish linkages at the local level between societies, teachers, foundations, distributors.
  – Seed money in SCV LEOS coffers.
  – Can raise money if properly documented.
  – Can generate and continuously improve content if a suitable firm can be identified.
  – Can manage and distribute material if a suitable firms can be identified.
• Adopt Exploratorium model.