

OPAS Student Success: Access, Motivation, Retention (SAMR) #5
August 16, 2006

Attendees: Jo Oshiro (OPAS), Dick Knight (Saturday Academy), Eileen Boerger (Agilis);
Jeremy Tucker (OPAS)

Summary

- **Resources List:** Jeremy has also implemented the OPAS Master Resources List at <http://opas.ous.edu/Committees/Resources/> so that all committees' resources are in one table. This table may be searched with a browser Edit Find function. The contents of the resources listed in the table may be searched from the Google search bar. The table is also sortable, ascending and descending, by each of the columns.
- **Standards:** Jeremy Tucker, OPAS Summer Intern who has taught Integrated Science at Hillboro High School for the past two years, has finished his survey of state science standards – their quality, usability, and inclusion of inquiry-based learning and engineering or design concepts. The work is linked to the “State Science Standards Review” at <http://opas.ous.edu/Committees/Resources/Standards/standards.html>. Massachusetts is an exemplar of clear and usable standards with inquiry, engineering, design, and technology content. Massachusetts wants to make sure they are meeting the needs of the current and future workforce. Most of the states which do address technology use this reason.
 - Standards are not the same as requirements, so we do not know how much technology and engineering classes can be used to fulfill graduation requirements. Good standards are necessary but not sufficient.
 - Because these standards are very new and still being implemented, we have no known data to show these standards or curricula are motivating or make a difference. (*Jo – College Board data for 2005 college-bound seniors show 7% of SAT Reasoning test takers intending to major in Engineering and Engineering Technologies, one of the lower numbers by state. This may be more indicative of the problem Massachusetts is trying to solve than the success of their program.*)
 - Action Item: Check Massachusetts data vs. Oregon and Massachusetts over time. What are Massachusetts' graduation requirements? How easy it is to get through school skipping the technology/engineering strand?
- **Data:** (Jeremy) In the Master Resources list, there is an article “A Ten Year Assessment of the Pre-Engineering Program for Under-Represented, Low Income and/or First Generation College Students at the University of Akron” by Lam, Srivatsan, et al. Journal of STEM Education 6:3 and 4, p. 14-20, July-December 2005. While the success rates are good, the participants were cherry-picked.
- **Fall all-OPAS Workshop:** Eileen would like to see an integrated explanation of the direction of OPAS as a whole – what are the main goals and action items? How do the committees fit into that? What are the conclusions? What are the programs we want to push? The committee agreed to bring forth the issue of how to bring industry on board with OPAS goals was discussed; bringing a strawman proposal to the workshop was recommended. (*8/30/06 - Jo has opened a conversation with Mary Beth Horton of the BEC on this issue, as several of their programs seem to have the same or similar goals.*)

- **Next Steps:**
 - Pick a few programs or ideas to champion – don't dilute the effort.
 - Is there something we can do to help these programs that get teachers more funding and access to industry? Focus on offering teachers a relationship with companies to increase their subject content knowledge and awareness of industrial practice and careers.
 - Make it easy – a checklist? – for small to medium companies to say yes; has to be do-able without a large HR and/or education department.
 - Publicize existing or create a seed grant program for teachers. (8/30/06 – *Jo's talks with Don Domes – the grant process is too time and labor-intensive for most teachers. Intel has a process which resulted in less labor for both proposers and reviewers, and better odds of getting funded for reviewers.*)
 - Is there a way to leverage the expertise of high-tech retirees? How easy is it to take technical expertise into the classroom, become a teacher? (8/30/06 – *Jo will follow up on a conversation with Hillsboro HS teacher Don Domes, in which he said it was very doable to get these people licensed as PTE (Professional Technical Education) teachers; they could even come teach one class a day while still regularly employed.*)
- **Next Meeting: Jo will poll committee members hoping to schedule in 2 weeks.**

Discussion Detail

Dick: The Massachusetts approach has mainstreamed engineering and technology rather than make a separate PTE track -- more effective use of students' time and understanding this way. Engineering is a potent tool for making science relevant in the regular classroom, and integrating design and engineering into science removes it from becoming a special pleading.

Eileen (EB): Data would be good; does this strategy increase student motivation? (*See Akron citation above at bullet "Data".*)

Dick: These are small schools and magnet programs. Great small schools have good success, but are hard to scale. We should try to come up with industry ties through ETIC to increase tours, facility use, and classroom presentations. Let's make a call to industry to be an effective partner for change - Mentor programs, non-profit support.

Jo: Instead of aiming straight at students, what about teachers? Remember our focus on MESA at the last meeting.

Dick: There is an NSF study showing that the most effective teachers know their field. It is not true that a good teacher can teach anything, without knowing the material.

EB: Could we design a menu for companies that provides some program choices and program development guidelines? We need to figure out easy ways for medium and small companies to say "yes". Find a few items that we can take action on without waiting for legislature, state

government, or school districts. Give businesses a way to participate that doesn't require a large HR department or an Education Department.

Dick: Talk to Intel – what works? Taking a bunch of High School students to an industry tradeshow doesn't do much. What if you sent them in with guide/mentors to show what the glitz means? What if you sent in teachers with guides? Costs are limited - sub time (*Jo notes this is approximately \$200 a day*), volunteer time.

EB: Sometimes it's hard to make what businesses do and show relevant. At one of the first "Take your daughter to work day"s at Mentor we took apart a computer to show boards and talked about everything in daily life that has chips ...

EB: I'd like to get a good overview of subcommittee activity. Committee worktime is very important. By then, this committee would be formulating support around MESA, industry days, pulling together a straw proposal on getting industry involved with motivating, informing teachers and students so we could start implementing.

Dick: Let me suggest a slightly different approach. Come into the workshop with a draft white paper and bring it into the workshop as an issue and make an ad hoc committee that day and then reform the committees. Who believes in this enough to help make it happen? Force each committee chair to come to some conclusions.

Jo: this may help prune actions to passion, energy.

EB: This approach may get the community behind some actions and programs.

Dick: Another thing I've had success with is a short checklist that you can use for your asking.

JO: send John Vinson info to Eileen

Dick: OMSI/ACCC workshop a potential forum for forming partnerships

EB: Lots of programs. Pick just a few (3?) to support. Otherwise it is too dilutive.

Dick: There are an unbelievable number of kids in school. Focus can be good, but it isn't enough to make a difference. If you want to hit something more broadly, how are you going to do that widely to make a difference?

Break the world into three pieces (student demographics)

- 1) College prep goodies not choosing engineering in droves
- 2) Mainstream students doing reasonably well in school
- 3) Educationally disadvantaged, social justice

Where do focus? Who are you going to aim at?

Dick: I think the highest leverage if you can do it is the classroom is aiming at the teachers. Potentially one of the things we have going for us is that our industry is somewhat distributed across the state.

EB: Teachers were one of our focus points.

Dick: One of the things we can offer our teachers is a relationship with our companies.

EB: Is there something we can do to help these programs that help teachers to get more funding, more access to industry?

Dick: Plant seeds that they can write grants around. Gotta expand the pot.
Kresge Foundation – capacity building grants.

EB: Can't attend October 13. Would really like to see is an integrated explanation of the direction of OPAS as a whole – what are the main goals and action items and how do the committees fit in to that? What are the conclusions? Programs we want to push?

Jo: Don Kirkwood's you can replicate evangelists ideas. *(8/30/06 - These came out of the Diversity committee, and are posted on the Diversity wiki. Because they seemed very similar to programs at the Business Education Compact, Jo brought them to the attention of Mary Beth Horton of the BEC.)*

EB: How can you attract high-tech retirees into education? Can you make the high school equivalent of "visiting professor"? That is a resource to be used. A lot of them will want to give back to the community. How do we make it easier for them to say yes.

JO: Talk to Mrs. Shearer, physics teacher at Southridge HS, who is now teaching after training as a teacher, then going to industry for 20+ years. *(Jo has an agreement in principle for a Saturday lunch date.)*

EB: Looked into Vietnam's education system – very math oriented. The s/w developers we have there are very smart.

Next Meeting Date: in 2 weeks.