



## OPAS Motivate Workgroup

# Bright Future Proposal to ETIC Planning Rollup

December 10, 2008

Program/ Element	Near-Term Treatment	Long-term goal
<p>Student Internships – BEC &amp; Saturday Academy ASE</p>	<p>Proven models ready for scaling up; such programs have proven beneficial for students who have demonstrated high potential and preparation when these internship experiences are at the time they are preparing to make key post-secondary education decisions like the choice of college and major. 70% of Saturday Academy ASE students choose a college major in the field of their high school apprenticeship. Program criteria:</p> <ul style="list-style-type: none"> <li>• History of placing interns to experience real-world engineering problem-solving and open-ended learning and intensive interaction with practicing engineers</li> <li>• History of outreach to underrepresented groups</li> <li>• Infrastructure for coordinating activities, collecting and reporting metrics, controlling and documenting expenditures, recruiting and effectively using volunteers, especially as mentors</li> <li>• Offer internships of sufficient length, focus and type that interns learn to articulate the impact on society of their field</li> <li>• Require culminating events causing reflection and reporting of experience</li> </ul>	<ul style="list-style-type: none"> <li>• Additional institutionalized support across all STEM disciplines, both in the business sector and across research facilities at the OUS (&amp; other?) campuses.</li> <li>• OPAS should identify collaborative partners, possibly ceding any leading role.</li> <li>• Possible review of program criteria, metrics, and reporting</li> </ul>
<p>Teacher Internships – BEC</p>	<p>Proven model ready for scaling up; because teacher interns gain a better understanding of a technical field, they can share the impact with tens or hundreds of students year after year. Program criteria as above, with the addition of:</p> <ul style="list-style-type: none"> <li>• Interns are required to develop a plan to incorporate their experiences into the classroom</li> </ul>	<ul style="list-style-type: none"> <li>• Additional institutionalized support across all STEM disciplines; possible additional involvement of OUS research facilities.</li> <li>• OPAS should identify collaborative partners, possibly ceding any leading role.</li> <li>• Possible review of program criteria, metrics, and reporting</li> </ul>
<p>Team-based activities for Grades 4-9</p>	<p>In an appropriate social context, engage teams of students in demanding and socially relevant technical challenges and bring groups of students together for culminating events. Impact and accountability require a systems approach including quality program design , teacher development, and objective evaluation</p>	<ul style="list-style-type: none"> <li>• Invest in such programs statewide that collaborate with schools to provide access to school facilities and OST engineer coaching staff and equipment</li> <li>• OPAS may need to identify possible additional sources of sustaining funds or help such programs develop long-term funding</li> </ul>

Program/Element	Near-Term Treatment	Long-Term Treatment
Engineering / Technology After-School Champions (Grades 9-12)	<p>Pilot program funded December, 2008. Goals:</p> <ul style="list-style-type: none"> <li>• Identify necessary infrastructure for the program itself <ul style="list-style-type: none"> <li>○ How to administer funding?</li> </ul> </li> <li>• Test the model: <ul style="list-style-type: none"> <li>○ What supports are needed at the school level?</li> <li>○ What criteria should apply?</li> <li>○ How should programs be measured and evaluated?</li> </ul> </li> </ul> <p>Investment in engineering and applied science out-of-school-time (OST) programs statewide should target in-depth experiences that provide the contact hours, mentoring, and hands-on engagement required to significantly impact student interest, academic engagement and college plans. Impact and accountability require a systems approach including quality program design , teacher development, and objective evaluation</p>	<ul style="list-style-type: none"> <li>• Self-supporting via districts,</li> <li>• leveraging staff, volunteers, resources and funding from schools and other organizations (e.g., ORTOP).</li> <li>• OPAS may need to identify possible additional sources of ongoing funds..</li> </ul>
Champion/Coach Stipend	<ul style="list-style-type: none"> <li>• Pilot program matching funds; district discretionary funds and alternate sources</li> <li>• Duties as described on page 8: <a href="http://opas.ous.edu//Workgroups2007/Motivate/Pilot_Program_for_OPASProposal2009-2011A-OST_v11.pdf">http://opas.ous.edu//Workgroups2007/Motivate/Pilot_Program_for_OPASProposal2009-2011A-OST_v11.pdf</a></li> </ul>	Union contract
Assistant Stipend	<ul style="list-style-type: none"> <li>• Optional for the Pilot Program</li> <li>• Pilot program matching funds; district discretionary funds and alternate sources</li> <li>• Duties as described on page 8: <a href="http://opas.ous.edu//Workgroups2007/Motivate/Pilot_Program_for_OPASProposal2009-2011A-OST_v11.pdf">http://opas.ous.edu//Workgroups2007/Motivate/Pilot_Program_for_OPASProposal2009-2011A-OST_v11.pdf</a></li> </ul>	Union contract
Programming/"Curriculum"	<p>Short menu of known programs of known quality -- see "Culminating Experiences", below</p> <p>Effective program design works to reach goals through the intentional structuring of activities, groups, and events that are designed to reach the goals. Programs foster the development of relationships and connect content to a community context. Metrics (see "Measurable, Comparable Results", below) both define the program goals and provide the needed program evaluation that improves programming over time to better reach these goals. Incorporates best practices:</p> <ul style="list-style-type: none"> <li>• Team-based</li> <li>• Ongoing attendance/participation; not a "drop-in" structure; high contact hours</li> <li>• Adult mentoring</li> <li>• Hands-on engineering</li> <li>• Enriching – connects to and improves student appreciation for classroom learning</li> </ul>	<ul style="list-style-type: none"> <li>• Explicit program goals that connect to prior and following educational sectors (e.g., middle-school club students move on to high school teams and internships).</li> <li>• Explicit program criteria for quality of student experience that are comparable across programs</li> <li>• <i>Program structure that leverages additional organizational resources for training, ongoing support, and culminating event logistics.</i></li> </ul> <p><i>David/Ryan: "Membership in the Academy" ???</i></p>
Culminating Experience	<p><i>"(Jo's draft for further discussion)</i></p> <ul style="list-style-type: none"> <li>• <i>ORTOP/ FIRST Tech Challenge</i></li> <li>• <i>ORTOP/ FIRST Robotics</i></li> <li>• <i>InvenTeam</i></li> <li>• <i>ISEF-circuit Science Fair team engineering projects</i></li> <li>• <i>Design for the Other 90%</i></li> <li>• <i>Others? JETS/ National Engineering Design Challenge; cars? SpaceGrant?</i></li> </ul>	<ul style="list-style-type: none"> <li>• Variety of types of experiences to be inclusive for those not culturally or personally disposed to competition</li> <li>• <i>School- or community-based outreach showcasing student work and/or serving the community</i></li> </ul>

Academic-Year Basis	May not be possible to incorporate as part of the pilot	Year-long club with committed student attendance serving as a platform for enabling multiple venues for students to experience technology, engineering, applied science: teams, projects, speakers/guests, exhibitions as both attendees and exhibitors
Professional Learning Community	<ul style="list-style-type: none"> <li>• Informal, SuperQuest-based</li> <li>• OUS-supported listserv a possibility</li> </ul>	<ul style="list-style-type: none"> <li>• More formal support structure, possibly through leveraging organizations (e.g., ORTOP)</li> <li>• Dedicated website or Web 2.0 entity</li> <li>• Best Practices documentation</li> <li>• Possible recurring conference or workshop</li> </ul>
External funding	TechStart Education Foundation	<ul style="list-style-type: none"> <li>• District-funded</li> <li>• <i>Possible fees for overarching structure supporting professional learning community?</i></li> <li>• <i>TechStart support for inter-program evaluation?</i></li> </ul>
Measurable, comparable results	<p>Metrics for student/program success:</p> <ul style="list-style-type: none"> <li>• Attendance/persistence</li> <li>• Pre- and post-assessment of knowledge of engineering careers and their real-world problem-solving roles</li> <li>• Increased ability to connect engineering processes and research-based knowledge to current public concerns and problems-based learning activities and applications demonstrated through projects</li> <li>• Increased interactions with professional role models and mentors with defined delivery targets</li> </ul> <p>Increased interest and knowledge of engineering careers, skills, and opportunities as measured by surveys and information assessments</p>	<ul style="list-style-type: none"> <li>• Common assessment instruments developed by OPAS and/or collaborative partners</li> <li>• <i>Identification of any additional metrics and criteria for program effectiveness and cross-program comparability</i></li> </ul>