



OPAS Steering Committee ETIC Proposal Writing Task Force

Prepare Committee Subproposal: Computer Science

Please, as authors of subproposals, review your proposals and respond (email to Jo) to these bullets in no more than one or two pages:

- Paragraph characterizing the elements of your exemplar program.
 - In Class programs should be offered in high schools statewide to provide students with increased opportunities to explore computer science and related careers. These classes should have rigorous academic content of value to college bound students; proven ability to serve a wide demographic range of students; and should be a complete system including proven curriculum, teacher development and supports, and objective standards and evaluation. No complete exemplar currently exists for computer science, but key elements have been demonstrated by the SuperQuest teacher development program developed by the Oregon Computer Science Teachers' Association in collaboration with TechStart, a non-profit formed by the Software Association of Oregon. The College Board AP curriculum and the IB computer science curriculum are other high quality elements. This proposal will build on this core and provide the resources to enhance missing elements as well as to propagate best practices State-wide.
- How is this program likely to deliver more well-prepared college freshman choosing engineering, CS, or materials science?
 - There is increasing awareness in Oregon that we are well behind national norms in computer science offerings in high schools and, as a result, we are behind in students taking AP CS exams and enrolling in CS and related programs in Oregon universities. College Board data indicates that Oregon students only take the AP CS exam at about one-third the national rate and these students are predominately white and Asian males. This proposal will expand the availability of CS in high schools statewide by investing in development of a larger number of qualified teachers and by establishing centers of excellence to support these teachers. Statewide gaming contests will be expanded to encourage increased demand for computer science classes by students. Low income schools and schools with under-represented demographics will be targeted for special support as will schools and programs that offer innovate ways to engage young women in CS (ex: magnet schools, "girls only" classes, etc.)
- How does this program achieve sustainable systemic change – that is, change that will outlive the OPAS committee structure and its solicitation and oversight of allocation of ETIC funding.
 - The proposal will provide start-up grants for schools to adopt an exemplar computer science curriculum and will support the associated teacher development. To qualify for these funds, schools will be required to agree to a sustainability plan. It is

expected that participating schools will build the on-going expenses into their base budgets just as they do for other academic programs.

- Delineate the balance of quantity, quality, and diversity
 - By focusing primarily on teacher development, we are placing an emphasis on quality and diversity with the expectation that we will achieve increased numbers of participating students and increased impact on students through enhanced curriculum and better supported teachers. Expansion of the gaming contest is intended to be a high quality experience that will provide additional motivation and support which teachers can use to engage students.
- Describe how to stage the growth in terms of geography, types of schools, target student audiences
 - The expansion of SuperQuest will go hand-in-hand with the expansion of regional centers of excellence aligned with Oregon Educational Service Districts. Currently the Portland/Salem metro area is reasonably well served by SuperQuest though there is a significant lack of participation from Portland Public Schools. For the first 2 years the geographic expansion will likely be focused on Lane ESD, Southern Oregon ESD, and High Desert ESD. Expansion to better support under-served demographics will likely have an initial focus on the Multnomah ESD with gradual expansion to other ESD's identified as having significant opportunities for impact.
- The criteria question – to allow us to write the proposal “un-branded” to correctly follow procurement rules as a state agency – some ideas to consider:
 - SuperQuest has been identified as a central focus because it brings together the resources in the State most concerned with increasing participation in pre-college computer science. In its current condition this is a heavily volunteer driven activity with very limited financial resources. SuperQuest has a successful track record of engaging some of Oregon's leading CS educators to support current and aspiring CS pre-college teachers. Historically, SuperQuest has not been linked to AP or IB CS programs. This proposal will provide the resources to allow SuperQuest and its collaborating partners, such as TechStart, to strategically expand their current summer workshops and provide regional support for teachers throughout the year. This group will also have the opportunity to determine how to more effectively leverage student engagement with introductory robotics and gaming into more advanced CS experiences such as AP and IB classes. The goal is to make CS programs widely available in Oregon schools and increase the number of pre-college students who explore computer science, prepare for and choose to major in CS in college.

The group brainstormed some metrics; this list is centered on Out of School Time (OST) High School programs, but may provide some inspiration for other programs and so is included here.

- Because “In Class” programs involve considerable contact hours, the opportunity for evaluation of learning outcomes, and the potential for longitudinal tracking of students' actual choice of field as they enter college, we expect to be able to determine the impact of this program on the core ETIC goal: increasing the number of qualified students who choose to pursue engineering and applied science degrees in college.