Hidden Worlds
Science Olympiad Event

The Center for the Enhancement of Science and Mathematics Education
Marilyn Roode Decker, Director

Significance
The K-12 portion of CenSSIS will be guided by the Center for the Enhancement of Science and Mathematics Education (CESAME) and the Educational Advisory Board. The Board will guide the development of a Hidden Worlds Challenge and Teacher Workshops. The goal of each is to engage students in doing engineering by participating in a design challenge. Opportunities will be built into the program for student and faculty mentoring during the entire challenge process. Ultimately we hope some students will be interested in attending one of the partner engineering schools.

Hidden Worlds - Science Olympiad Events
The design team for each challenge will be composed of researchers, graduate students, undergraduates and teachers. Each year the design team will propose a challenge that addresses one of the testbed areas of CenSSIS and will be developmentally appropriate for the students. Each challenge will be piloted in local schools, revised by the design team, reviewed by the advisory board, and submitted to the national event organization. As CESAME gains experience designing events, the program will be expanded to include all CenSSIS partners.

How the Challenge Works
These events are challenges that teams of students try to complete to achieve the highest score. The prototype event will ask student teams to develop a device which will locate metallic objects of various sizes and materials hidden under a 4×4 piece of plywood. The device could be a simple radio-controlled vehicle with a mounted sensor. The student teams would have a given amount of time to scan the surface and produce a grid showing the locations and sizes of the objects identified. Teams would be scored on the number found and the accuracy of the identified locations.

- Write event protocol (prototype event: simple electromagnetic sensor)
- Pilot event in local Science Olympiad Competition
- Provide e-mentoring support for teams who select the event
- Identify teams who are top three scorers in the event in local competition
- Bring student teams and teachers to NU for a "tour" of the ERC and a users conference to fine tune the event parameters
- Propose the event to National Science Olympiad Committee
- Provide support for NSO summer training
- Event becomes part of NSO offerings
- Repeat for next focal area

Hidden Worlds One-Day Hands-on Teacher Workshops
These one-day teacher workshops would be held in conjunction with a national or regional meeting of professional organizations associated with the work of the ERC. The workshops will be developed for each of the Center's focal areas through a collaborative effort of CESAME and NU ERC staff. The goals for teachers in the sessions would be to increase their understanding of the science content of the focal area, to increase their awareness of the career opportunities in the area, and to make concrete connections to the existing standards-based instructional materials that introduce these concepts to their students.

- Identify SBC materials and develop a workshop in one focal area
- Pilot the elements of the workshop with area teachers
• Pilot the full workshop at a local professional meeting
• Gather feedback from participants related to session goals
• CESAME and NU ERC staff meet to review evaluations and modify the workshop content and structure
• Run the workshop again, inviting representatives from other ERC partners
• ERC Partners will replicate the workshop with their personnel
• Repeat process for workshop targeting the next focal area

About CESAME
CESAME is a non-profit K-12 mathematics and science education reform organization supported by the National Science Foundation, Northeastern University, and other public and private organizations. CESAME has gained recognition locally, regionally and nationally for its efforts in creating awareness and supporting implementation of standards-based curricula, and for providing high quality professional development in mathematics and science. CESAME's full and part time staff represent all levels of the educational community, from elementary to higher education, including four Presidential Awardees. Most have experience as curriculum developers and workshop leaders. All are committed to professional growth and have strong connections to national and local reform efforts.

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