

DRL-0917496 Planning Grant 2009-2010: A Science Education Center for the Third Age (SECTA) University of Southern Maine, National Resource Center for Osher Lifelong Learning Institutes

The National Resource Center (NRC) of the Osher Lifelong Learning Institutes (OLLI) network was the proud recipient of a \$71,434 award in 2009-10 to design a virtual center whose purpose will be to discover new ways of teaching science to adults over age 50; and to energize informal science educators and increase their ability to help this underserved audience connect to and care about STEM content. The SECTA planning project sought to lay the groundwork for developing a learning resource for informal science educators in museums, zoos, aquaria, botanical gardens and other centers, as well as provide stimulating learning opportunities for older adults. The principal vehicle for the project was the development of partnerships between OLLIs and science centers (defined as organizations/institutions where informal science education takes place). Six OLLI and science center partnerships completed pilot studies with funding OF \$1000 each from the NSF planning grant. The partnerships developed new programs at the science centers, evaluated their success, and helped the planning team define the full scale development of SECTA and how it will inspire and provide resources for future collaborative OLLI and science center partnerships. Other deliverables were national surveys of OLLIs and Science Centers to learn the current extent and future interest in STEM programming for older adults; a national weeklong CAISE forum on "Learning Science in the Third Age;" and completion of a Full Scale Development proposal to NSF for additional funding.

The Physics of Cycling plus Chemistry in the Culinary Laboratory

Two exciting workshops were the outcome of a collaboration between OLLI at the University of Montana and spectrUM, the interactive science center located on the University of Montana campus.

Wonder Wheels: Physics of Cycling

A one-day workshop exploring the physics of biking and bike maintenance, co-taught by Glenn Govertsen (a celebrated physics teacher) and Jon Thomas (a master bike mechanic).

Classic Mediterranean Cuisine: Chemistry in the Culinary Laboratory

A half-day workshop exploring the chemistry of cooking through a guided cooking class held as an interactive "cooking show", co-taught by Ray Risho (master chef) and Dr. Charles Thompson (UM medicinal chemist).



(Left) Glenn Govertsen giving a physics demonstration in his class Wonder Wheels: Physics of Cycling
(Right) Ray Risho makes preparations to teach Classic Mediterranean Cuisine: Chemistry in the Culinary Laboratory

Lunch Break Science and Environmental Education

OLLI at the University of Richmond and the Science Museum of Virginia worked in partnership to attract senior citizens who had not previously attended the museum's ongoing Lunch Break Science education programs. Seniors attended a day-long program at the Rice Center to learn more about environmental issues.

Topics covered in the Lunch Break Science sessions included: The Galapagos, Sri Lanka and Elephants, Natural Disasters and Chinese Medicine. The VCU Rice Center program focused on the fragile habitat of the James River.



(Left) Lunch Break Science sign at the Science Museum of Virginia.
(Right) OLLI members study the fragile habitat of the James River as part of a VCU Rice Center field trip.

Green Architecture and Engineering

Four Bay Area OLLIs, lead by OLLI at California State University East Bay collaborated with the Exploratorium to create the Green Architecture and Engineering event at the Exploratorium in San Francisco. OLLI science programs at the University of the Pacific, Sonoma State University, CSU East Bay and Dominican University collaborated with each other to produce lectures, labs and courses related to Green Architecture and Engineering. These four OLLIs presented at the Exploratorium's 'Sharing of Results Day' on May 17, 2010.



OLLI members exploring the Exploratorium

Summary of Findings

- Survey of OLLIs:** 66 of 122 OLLIs responded. The most common challenges to offering STEM programming were a.) funding, b.) lack of teaching expertise available, c.) facilities, d.) barriers within institutional decision-making infrastructure
- Survey of Science Centers:** 19 science centers responded. 13 reported having no current programs for older adults, 7 reported interest in future collaborations. The most common challenges were staffing, priorities and funding.
- CAISE Forum:** 17 discussants (16 women and 1 man) participated in an asynchronous online threaded discussion, each day a different focus on some aspect of STEM learning for elders. Insights gained were incorporated into the NSF proposal and will inform SECTA.
- OLLI Science Center Partnerships:** Attracted 1186 participants over age 50. Mid-project interviews and final reports revealed that project leaders found the collaborations between OLLIs and Science Centers rewarding and productive and all reported plans for future work together. There were no reported difficulties between the individual project leaders, but 3 of the 6 reported scheduling and procedural problems between the collaborating institutions – SECTA may be able to provide checklists and planning guides to lessen these problems. The project that focused on underserved folks within the older adult population found that their hypothesis that providing transportation would encourage participation was wrong. Feedback showed that the participants felt intimidated by the science museum and would have preferred a program that came to their community center. When asked what resources would be useful to the project leaders in planning future programs together all partnerships mentioned financial support; two-thirds mentioned information on other projects, lessons learned and an ideas exchange. In summary, the experience supported plans for SECTA to foster and fund more collaborations between OLLIs and science centers, collect information, and help to develop and enhance relationships to enhance science education for older adults.
- Development of Planning Team for Full Scale Development Proposal.** Kali Lightfoot, Principal Investigator, National Resource Center for Osher Lifelong Learning Institutes based at the University of Southern Maine was joined in this effort by Co-Pis: Kurt Feichtmeir, The Exploratorium; Bette Felton, Cal State University East Bay; Babette Moeller, Education Development Center; Ara Rogers, OLLI at University of South Florida; and Lucille Salerno, University of Missouri-Columbia.
- Unintended Wonderfulness:** from the Southern Oregon pilot project: "When holding classes at our [science center] auditorium, noise occasionally became an issue while maintenance was being done on the facility. We explored the possibility that OLLI could fund a portion of the cost to put doors on the room. Unfortunately the cost escalated as that construction would trigger other ADA requirements. A science center donor heard about OLLI's willingness to contribute their own funds and offered a 4:1 match. OLLI's \$5000 offer grew to a \$25,000 contribution that will now pay for doors, ADA fixes, new chairs, new carpet and high-def A/V equipment. This simply would not have happened without both organizations working together. A success story for the whole community!"

Connections we would like to make at CAISE-ISE: Anyone interested in developing STEM programming for adults age 50+, or anyone who wants to talk about existing programming they are involved with that attracts adults 50+



Robots and Robotics

OLLI at the University of Pittsburgh and Carnegie Mellon University collaborated with the Carnegie Science Center to explore robotics. This three-part series was held at the Carnegie Science Center where participants were also invited to explore the roboworld™ exhibition.

Sessions offered:

Robots and Robotics through the years - A Personal View with Dr. Ralph Hollis.
Medical Robotics - The Wonder of Snake Robots and Minimally Invasive Surgery with Dr. Howie Choset.
Robots in Space with Dr. William (Red) Whittaker



(Left) OLLI member M. Harris comes to grips with robotics at Carnegie Science Center's roboworld™ Exhibit.
(Right) A presenter at the Carnegie Science Center provides OLLI participants with a detailed explanation of a robotic device.

Vital Signs: Invasive Species Monitoring

OLLI at the University of Southern Maine worked in partnership with the Gulf of Maine Research Institute (GMRI) to encourage OLLI members to participate in the GMRI Vital Signs program. This program was initially developed for Maine middle school students, providing them with authentic science experiences focused on invasive species monitoring and sharing data through the Vital Signs website. OLLI members helped to provide educational materials for the website or opted to work directly as an extra pair of hands in support of middle school teachers and their students.



(Left) OLLI at USM participants visit the Gulf of Maine Research Institute's Vital Signs website © GMRI
(Right) Interior view of the Gulf of Maine Research Institute with OLLI group in lab

Robotics, Nanotechnology and DaVinci Models

OLLI at Southern Oregon University and ScienceWorks in Ashland collaborated to offer OLLI STEM courses at ScienceWorks:

Robotics workshop: Participants watched demos showing a range of robots in action followed by a 'hands-on' workshop where they explored PicoCrickets and NXT Lego Mindstorm systems.

Nanotechnology: A ScienceWorks weekend program and lecture event (there were 537 attendees at this very successful event!)

Da Vinci Models: A class on Leonardo da Vinci and his inventions. The class opted to build Leonardo's cam hammer machine for blacksmiths. After constructing the machine from a 513-year-old blueprint the class donated the machine to ScienceWorks in Ashland, and painted a mural as background for it.



(Left) OLLI at SOU members pose with their Leonardo Da Vinci cam hammer.
(Right) Ownership of the cam hammer is passed from OLLI to ScienceWorks.