Friday, April 4, 2014

Technology-Enhanced Agency for Community Engagement ● 10:35am-12:05pm, *Convention Center, 100 Level, 113A* ● *Invited Learning Sciences Symposium on Scaffolding Self-Directed Learning in Technology-Enhanced Environments: Presentation* ● The Missouri Botanical Garden and MIT recently completed "Local Investigations of Natural Science" and "Community Science Investigators" – two NSF-funded projects leveraging technology to support STEM-rich after-school investigations of students' local communities. While each project had a slightly different focus, both sought to advance interest and awareness among participating tween-age youth (ages 9-13) in how STEM disciplines help in understanding and acting on community issues. Depending on the local project needs, we supported projects' use of use of geographic information system (GIS) software, global positioning system (GPS) receivers, augmented reality (AR) games and simulations, and use of StarLogo TNG agent-based modeling tools. *Presenter:* Bob Coulter (Missouri Botanical Garden)

Elements of design-based science teaching that affect middle school students' motivation ● 10:35am-12:05pm, *Convention Center, 400 Level, Terrace IV* ● *Selected Topics in Middle School Science Education – Roundtable Session* ● The primary purpose of this study was to examine the extent to which an afterschool science program affected middle school students' motivation to engage in science and engineering activities. The results from questionnaires, interviews, and observations were fairly consistent and demonstrated that students were motivated to engage in the science and engineering activities; yet, there were some areas that could be improved upon. These findings indicate that it is possible to motivate students to engage with science and engineering concepts in a voluntary, afterschool program. *Presenter:* Brett D. Jones (Virginia Tech)

Examining the Relationship Between Educational Goals, Self-Efficacy, and Science Academic Achievement in High School Students: A Latent Moderated Structural Model ● 2:15–3:45pm, *Convention Center, 200 Level, Hall* ● *Learning Sciences-SIG poster Session* ● In this study, goal setting theory provided a basis for testing a latent moderated structure (LMS) model to examine science achievement differences in 200 high school students in the Northeastern United States. Specifically, the LMS model was used to examine the impact of ninth grade students' educational goals in STEM on the relationship between STEM self-efficacy and science academic achievement. Findings suggest that a combination of high STEM self-efficacy and specific student educational goals in STEM may enhance science academic achievement. *Presenters:* Yueming Jia (Education Development Center, Inc.), Youn Joo Oh (Education Development Center, Inc.)

Sunday, April 6, 2014

Extending Learning in the CryptoClub with Student-Generated Online Tutorials ● 12:25-1:55pm, *Convention Center, 100 Level, 121C* ● *Invited Session: Changing the Game: Research Innovations and Interdisciplinary Development of Technologies – Poster session* ● This is a structured poster session, with discussant. Janet Beissinger's presentation features the CryptoClub afterschool project, which engages middle-grade students in using mathematics to make and break secret codes. The CryptoClub features web-based computer games and student-created online tutorials, made using technology such as iPads and screen-capture software, in which students explain their solutions to mathematics and cryptography problems. *Presenter:* Janet Beissinger (University of Illinois at Chicago)

Monday, April 7, 2014

A New STEM Education Model for a New Era: Integrating Social Justice, Urban Ecology, and Career Development ● 8:15-9:45am, *Convention Center, 100 Level, 121C* ● *Division C - Learning and Instruction / Section 1d: Science* ● This session discusses the impact of integrating social justice with STEM skill and career development in an out-of-school program for low income, ethnic minority youth. The papers report on outcomes of a National Science Foundation ITEST-funded project that engaged students from an urban center in using STEM skills to address community problems. Researchers found that integrating these strands supported the development of students' self-efficacy, career exploration regarding STEM, community critical consciousness and the potential of STEM to provide a secure base from which students could explore STEM careers. *Session Organizer:* Dennis J DeBay (Boston College) **Chair:** Michael Barnett (Boston College) **Discussant**: Caroline E. Parker (Education Development Center, Inc.)

Sharing Place: The Virtual Watershed ● *2:15-3:45pm, Convention Center, Terrace Level, Terrace IV* ● *Part of PCs in the Himalayas and iPads on the Reservation: Impact of Technology on Learning Within Cultures- Roundtable Session* ● Students from the two communities engage in study and reflection about the impact of water health, monitoring, restoration efforts, and historical and future land-water policy that impact their communities, individually and collectively. The research findings from this project will assist educators and teachers of American Indian students to more effectively incorporate interdisciplinary STEM learning activities into the curriculum and engage in projects of importance to the community. *Presenter:* Anne Kern (University of Idaho)

For more information about these and other sessions, visit http://www.aera.net.