

# Joyce Lin

(formerly Joyce Wang)  
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## EDUCATION

**University of Pennsylvania**, Philadelphia, PA 2014  
Graduate School of Education  
Ed.D., Teaching, Learning, and Leadership  
Dissertation Title: *The impact of multiple visualizations on children's learning in a science museum*  
(Dissertation with distinction)  
Committee Members: Susan Yoon (chair), Yasmin Kafai, Karen Elinich

**Trinity University**, San Antonio, TX  
M.A., Teaching, Secondary Education 2006  
B.S., Biology 2005

## AREAS OF INTEREST

- Science education
- Educational technologies
- Informal education
- Teacher education

## EXPERIENCE

**Knowles Science Teaching Foundation** 2014-present  
*Program Officer for Teacher Development*  
KSTF is an organization that supports the professional growth and development of beginning high school math and science teachers all over the nation. As part of a team, I design and implement a comprehensive and cohesive professional development program for over 70 math and science Teaching Fellows focused on content knowledge for teaching; participate on a committee to define and refine our organization's vision on inquiry and teacher leadership; and participate in the annual selection process of Teaching Fellows.

**University of Pennsylvania** 2009-2014  
*Graduate Student Research Assistant*

**Innovative Technology Experiences for Students and Teachers – Nanotechnology and Bioengineering in Philadelphia Public Schools (ITEST-Nano) (NSF #0737437)**

Principal Investigator – Susan Yoon, Ph.D.

ITEST-Nano is a program that invites teachers and students to learn about cutting-edge Nanotechnology and biology concepts that are aligned with core curriculum concepts. I facilitated group discussions on curriculum development, collected and analyzed quantitative and qualitative data (from surveys, interviews, observations, and tests), assisted teachers during their Nano curriculum unit implementation in their respective schools, supported professional development workshop activities, and conducted individual and group interviews.

**Augmented Reality for Interpretive and Experiential Learning (ARIEL) (NSF # 0741659)**

Principal Investigator – Susan Yoon, Ph.D.

ARIEL is a project conducted with The Franklin Institute in Philadelphia to explore the use of augmented reality in informal science education in the context of museum exhibition. As project manager, I facilitated team meetings to discuss the design of different phases of the project, recruited schools and families to participate in the project, assisted in the design of the various research instruments (observation notes, pre-/post-test measures, and interviews), assisted in all aspects of data collection, analyzed and evaluated qualitative and quantitative data, and published and presented findings at national and international conferences.

**Project: Graphical Programming for Constructing Complex Systems Understanding in Biology (DRK12-Biograph) (NSF # 1019228)**

Principal Investigator – Eric Klopfer, Ph.D., Massachusetts Institute of Technology (STEP Lab)  
Co-Project Investigator – Susan Yoon, Ph.D., University of Pennsylvania

This research project is a collaborative effort between UPenn and MIT that seeks to address student misconceptions in biology, introduce complex systems into the curriculum, and develop an understanding of the role of computational thinking and modeling in the classroom. I recruited students to pilot measurement instruments; collected, coded, and analyzed various types of quantitative and qualitative data; and collaborated with the MIT team to design and implement summer PD workshops for teachers.

## TEACHING EXPERIENCE

University of Pennsylvania, Philadelphia, PA

*Instructor*

Spring 2013

EDUC 657- Advanced Methods in Secondary Education: Science Methods (Master's Course)

In this course, I re-designed portions of the curriculum based on alumni's feedback to include more pedagogy. I taught new topics on professional learning communities, informal learning through after-school clubs, and literacy strategies (reading, writing, and talking science).

*Teaching Assistant*

Fall 2012

EDUC 627 – Teaching Middle and Secondary Schools: Science (Master's Course)

In this first semester, secondary science methods course with pre-service teachers, I designed and led portions of the class on topics such as inquiry teaching, argumentation, and cooperative learning.

*Teaching Assistant*

2010-2012

EDUC 657 - Advanced Methods in Secondary Education: Science Methods (Master's Course)  
In this second semester, science methods course, I facilitated class discussions on topics such as gender and science, multicultural science education, and socio-scientific issues.

**L.G. Pinkston High School**, Dallas, TX 2006-2009  
*High School Science Teacher*

Biology & Integrated Physics and Chemistry

As a science teacher, I planned and organized the curriculum for the department, participated in new school initiative committee to address methods to improve student achievement, created, organized and conducted the first school-wide science fair, and created, planned, and implemented a two-week summer 'Science and Math Academy' for incoming freshmen.

Certification in Life Sciences Grades 8-12 2006-2011

## **PUBLICATIONS AND PRESENTATIONS**

### **Journal Articles Refereed**

- Yoon, S., **Lin J.**, Anderson, E., & Elinich, K. (accepted major revisions). How augmented reality enables conceptual understanding of challenging science content in a science museum: A case of Bernoulli's Principle. *Educational Technology, Research & Development*.
- Yoon, S., Koehler-Yom, J., Anderson, E., **Lin, J.**, Klopfer, E. (2015). Using an adaptive expertise lens to understand the quality of teachers' classroom implementation of computer-supported complex systems curricula in high school science. *Research in Science & Technological Education*. doi: 10.1080/02635143.2015.1031099
- Yoon, S., & **Wang, J.** (2014). Making the invisible visible in science museums through augmented reality devices. *Tech Trends*, 58(1), 49-55.
- Wang, J.**, & Yoon, S. (2013). Scaffolding visitors' learning through labels. *Journal of Museum Education*, 38(3), 320-332.
- Yoon, S., Elinich, K., **Wang, J.**, Van Schooneveld, J., & Anderson, E. (2013). Scaffolding informal learning in science museums: How much is too much? *Science Education*, 97(6), 848-877.
- Yoon, S., Elinich, K., **Wang, J.**, Steinmeier, C., & Van Schooneveld, J. (2012). Learning impacts of a digital augmentation in a science museum. *Visitor Studies*, 15(2), 157-170. doi:10.1080/10645578.2012.715007
- Yoon, S., Elinich, K., **Wang, J.**, Steinmeier, C., & Tucker, S. (2012). Using augmented reality and knowledge-building scaffolds to improve learning in a science museum. *International Journal of Computer-Supported Collaborative Learning*, 7(4), 519-541. doi:10.1007/s11412-012-9156-x

### **Conference Proceedings Refereed**

- Yoon, S., Anderson, E., Elinich, K., Park, M., & **Lin, J.** (2015). How augmented reality, text-based, and collaborative scaffolds work synergistically to improve learning in a science museum. To appear in the proceedings of the *International Conference for Computer Supported Collaborative Learning*, Gothenburg, Sweden.
- Yoon, S., Goh, S., **Wang, J.**, Klopfer, E., Schoenfeld, I., Wendel, D., Sheldon, J., & Scheintaub, H., (June 2014). A Framework to scaffold learning about complex systems in science classrooms. Paper presented at the *International Conference of the Learning Sciences*, Boulder, CO.
- Yoon, S., Koehler, J., **Wang, J.**, & Anderson, E. (June 2014). Using an adaptive expertise lens to understand the quality of teachers' classroom implementation of computer-supported reform curricula in high school science. Paper presented at the *International Conference of the Learning Sciences*, Boulder, CO. **(Nominated as best conference paper)**
- Yoon, S., Yang, Z., Liu, L., Koehler, J., Goh, S., **Wang, J.** (June 2014). Becoming in teaching: Understanding the relative importance of social and human capital on urban STEM education reform. Paper presented at the *International Conference of the Learning Sciences*, Boulder, CO.
- Wang, J.**, & Yoon, S. (June 2014). Learning with multiple visualizations in the science museum. Paper presented at the *International Conference for the Learning Sciences*, Boulder, CO.
- Yoon, S., **Wang, J.**, Anderson, E., Elinich, K. (June 2014). Using AR to scaffold learning about conceptually challenging science content in a science museum. Paper presented at the *International Conference for the Learning Sciences*, Boulder, CO
- Yoon, S., Klopfer, E., **Wang, J.**, Sheldon, J., Wendel, D., Schoenfeld, I., Scheintaub, H., & Reider, D. (June 2013). Designing to improve biology understanding through complex systems in high school classrooms: No simple matter! In N. Rummel, M. Kapur, M. Nathan, & S. Puntambekar (Eds.), *Proceedings of the 10<sup>th</sup> International Conference on Computer Supported Collaborative Learning*. University of Wisconsin-Madison, WI: International Society of the Learning Sciences.
- Goh, S., Yoon, S., & **Wang, J.** (July 2012). Investigating the relative difficulty of various complex systems ideas in Biology. In J. van Aalst, K. Thompson, M. Jacobson, & P. Reimann (Eds), *Proceedings of the 10<sup>th</sup> International Conference of the Learning Sciences*. Sydney, Australia: International Society of the Learning Sciences.
- Wang, J.**, Yoon, S., Elinich, K., & Van Schooneveld, J. (July 2012). Investigating the effects of varying labels as scaffolds for visitor learning. In J. van Aalst, K. Thompson, M. Jacobson, & P. Reimann (Eds.), *Proceedings of the 10<sup>th</sup> International Conference of the Learning Sciences*. Sydney, Australia: International Society of the Learning Sciences.
- Yoon, S., Elinich, K., **Wang, J.**, Steinmeier, C., & Van Schooneveld, J. (July 2011). Fostering critical thinking in science museums through digital augmentations. In H. Spada, G. Stahl, N. Miyake, & N. Law (Eds.), *Proceedings of the 9<sup>th</sup> Conference of Computer Supported Collaborative Learning*. Hong Kong, China: International Society of the Learning Sciences.
- Yoon, S., Elinich, K., Steinmeier, C., **Wang, J.**, & Tucker, S. (July 2011). Learning science through knowledge-building and augmented reality in museums. In H. Spada, G. Stahl, N. Miyake, & N. Law (Eds.), *Proceedings of the 9<sup>th</sup> Conference of Computer Supported Collaborative Learning*. Hong Kong, China: International Society of the Learning Sciences. **(Nominated as best conference paper)**

## Book Chapters

Yoon, S., **Wang, J.**, & Elinich, K. (accepted). Augmented reality and learning in science museums. In D. Sampson (Ed.), *Digital systems for open access to formal and informal learning*, (pp. XX–XX). Switzerland: Springer International.

## Conference Presentations

Yoon, S., Anderson, E., **Lin, J.**, & Elinich, K. (2015, April). *Affordances of different genres of scaffolds for learning in a science museum*. Symposium presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Yoon, S., Klopfer, E., Goh, S., Sheldon, E., Schoenfeld, I., Wendel, D., Scheintaub, H., Koehler-Yom, J., Anderson, E., **Lin, J.**, Oztok, M., & Evans, C. (2015, April). *Building curriculum and instruction for Next Generation Science Standards: Articulating design features of computer-supported complex systems learning in science classrooms*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Bogiages, C., Brown, R., & **Lin, J.** (2015, April). *Professional development through STEM integration: How early career math and science teachers respond to experiencing integrated STEM tasks*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Chicago, IL.

Yoon, S., Elinich, K., **Wang, J.**, Anderson, E. & Derman, K. (2014, April). *Augmented reality and exhibit design to improve learning in a science museum*. Paper presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.

Yoon, S., Elinich, K., **Wang, J.**, & Van Schooneveld, J., Anderson, E. (2014, April). *In search of optimal scaffolding for informal learning in science museums*. Paper presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.

Yoon, S., Koehler, J., Anderson, E., **Wang, J.**, Klopfer, E., et al. (2014, April). *Understanding teachers' learning and implementation challenges in teaching to learn about complex systems*. Poster presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.

Yoon, S., & **Wang, J.** (2013, May). *Making the invisible visible in science museums through augmented reality devices*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, California.

Yoon, S., Elinich, K., **Wang, J.**, & Van Schooneveld, J. (2012, October). *Augmented reality in the science museum: Lessons learned in scaffolding for conceptual and cognitive learning*. Paper presented at the International Conference on Cognition and Exploratory Learning in Digital Age, Madrid, Spain.

Yoon, S., Elinich, K., **Wang, J.**, & Van Schooneveld, J. (2012, April). *Augmented reality and knowledge building: To what extent can they enhance learning in a science museum?* Paper presented at the annual meeting of the American Educational Research Association, Vancouver, British Columbia, Canada.

## AWARDS AND HONORS

GAPSA Professional Student Travel Grant (\$300)	2013
Graduate Student Seminar: AERA Division C	2012
GAPSA Professional Student Travel Grant (\$500)	2012
Doctoral Consortium: International Conference of the Learning Sciences	2012
Trinity University Murchison Scholarship Award	2001-2005

## SERVICE

### Field

<i>Panel Reviewer</i> , National Science Foundation	2015
<i>Manuscript Reviewer</i> , Journal of Learning Sciences	2014
<i>Co-organizer</i> , ICLS Doctoral Consortium Workshop	2012
<i>Co-organizer</i> , AERA Graduate Student Seminar – Division C	2012
<i>Manuscript Reviewer</i> , Journal of Urban Education	2009-2011

### University of Pennsylvania

<i>Member</i> , Search Committee for Assistant Professor in Teacher Education	2013
<i>Member</i> , Research Apprenticeship Community	2011-2014
<i>Co-Chair</i> , Penn Asian American Grad Student Association	2010-2011

### Community

<i>Sunday School teacher</i> , City Line Church	2010-present
<i>Co-Leader</i> , City Line Church Community Group	2012-2013
<i>Children's Ministry Team member</i> , City Line Church	2010-2012
<i>Mentor &amp; Tutor</i> , Honickman Learning Center	2011-2012
<i>Mentor</i> , University City Mentoring Program	2010-2011

## MEMBERSHIPS

National Science Teachers Association (NSTA)	2014-2015
American Educational Research Association (AERA)	2011-2014
International Society of the Learning Sciences (ISLS)	2011-2014
National Association of Research in Science Teaching (NARST)	2010-2011