SANDRA Y. OKITA
Program in Communication, Media, and Learning Technologies Design
Dept. of Mathematics, Science and Technology, Thompson Hall (322E-Box 8)
Teachers College, Columbia University
525 West 120th Street, New York, NY, 10027
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okita@tc.columbia.edu

EDUCATION

2008 Ph.D. Psychological Studies in Education, Stanford University
2005 Ph.D. Human-Computer Interaction, Media & Governance, Keio University, Japan
2003 M.A. Psychology, Stanford University
1999 M.A. Media and Governance, Keio University, Japan
1997 B.A. Policy Management, Keio University, Japan

RESEARCH INTERESTS

Cognition and technology, specifically:
Pedagogical agents/avatars in learning and behavior;
Robotics and education, virtual reality and games for learning;
Virtual learning environments as a learning platform;
Computer Supported Collaborative Learning;
Peer Learning, Self-other monitoring, learning by teaching, learning by doing, learning by observation in the domain of math, science, biology and agency.

EMPLOYMENT HISTORY

Program Director, Program in Communication, Media, and Learning Technologies Design, Department of Mathematics, Science, and Technology, Columbia University, Teachers College, 2016 - Present
Associate Professor, Program in Communication, Media, and Learning Technologies Design, Department of Mathematics, Science, and Technology, Columbia University, Teachers College, 2014 – Present
Assistant Professor, Program in Communication, Media, and Learning Technologies Design, Department of Mathematics, Science, and Technology, Columbia University, Teachers College, 2008 - 2014
Lecturer, Department of Child and Adolescent Development, San Jose State University, 2006 - 2007
Research Associate, Research Institute for Digital Media and Content, Keio University, Japan, 2005 - 2007
Research Assistant, School of Education, Learning in Informal and Formal Environments (LIFE) Science of Learning Center, Stanford University, 2003 - 2008

PEER REVIEWED JOURNAL PUBLICATIONS AND CHAPTERS

Okita, S.Y., Clarke, S. (accepted). Robots and Agents to Support Collaborative Learning. In Ohshima, J., Rose, C., Wise, A., Cress, U. (Eds.), *International Handbook of Computer-Supported Collaborative Learning*. New York, NY: Springer.

Okita, S.Y. (2019). Social Components of Technological Artifacts and the Implications of Social Interactions on Learning and Behavior. In Kuhl, P., Lim, S., Guerriero, S., and Van Damme, D. (Eds.), *Developing Minds in the Digital Age: Towards a Science of Learning for 21st Century Education*. (pp. 125-133). Educational Research and Innovation, OECD Publishing, Paris, https://doi.org/10.1787/562a8659-en.

Johal, W., Castellano, G., Tanaka, F., **Okita, S. Y.** (2018). Robots for Learning. *International Journal of Social Robotics*, 10 (3) 293-294. https://doi.org/10.1007/s12369-018-0481-8

Okita, S.Y. (2015). Turning to Embodied Technological Artifacts to Learn about Ourselves: Augmenting Performance and Learning through Recursive Feedback. In V. R. Lee (Ed.), *Learning technologies and the body: Integration and implementation in formal and informal learning environments*. (pp. 74-94). New York, NY: Routledge.

Okita, S. Y. (2015). The Potential of Peer Robots in the Creativity for Problem Finding and Problem Solving. *The Teachers College Record*, *117*(10) 1-8.

Okita, S.Y., & Ng-Thow-Hing, V. (2014). The effects of design choices on human-robot interactions in children and adults. In J. Marwowitz (Ed.), *Robots that talk and listen*. (pp. 291-320). De Gruyter.

Okita, S. Y. (2014). Learning from the folly of others: Learning to self-correct by monitoring the reasoning of virtual characters in a computer-supported mathematics learning environment. *Computers and Education, 71*, 257-278.

Okita, S. Y. (2014). The relative merits of transparency: Investigating situations that support the use of robotics in developing student learning adaptability across virtual and physical computing platforms. *British Journal of Educational Technology, 45*(5), 844-862.

Okita, S. Y., & Schwartz, D. L. (2013). Learning by teaching human pupils and teachable agents: The importance of recursive feedback. *The Journal of the Learning Sciences*, *22*(3), 375-412.

Okita, S. Y. (2013). Self-other's perspective taking: The use of therapeutic robot companions as social agents for reducing pain and anxiety in pediatric patients. *Cyberpsychology, Behavior, and Social Networking, 16*(6), 436-441.

Okita, S. Y., Turkay, S., Kim, M., & Murai, Y. (2013). Learning by teaching with virtual peers and the effects of technological design choices on learning. *Computers and Education*. *63*, 176-196.

Okita, S. Y., & Wright, D. (2013). Investigating the use of robotics in elementary schools: Increasing self-concept in STEM and identifying situations that influence performance and learning adaptability. *International Journal of Robots, Education and Art*, *3*(1), 1-14.

Okita, S.Y. (2013). Educational technology and instructional design in synchronous blended learning environments. In E. J. Francois (Ed.), *Transcultural blended learning and teaching in postsecondary education* (pp.170-192). Hershey, PA: IGI Global.

Ng-Thow-Hing, V, & **Okita, S. Y.** (2012). Playdates with robots, IEEE Computer Society. *Computer*, *45*(8), 73-75.

Okita, S. Y. (2012). Social interactions and learning. In N. M. Seel (Ed.), *Encyclopedia of the sciences of learning* (pp. 3104-3107). New York, NY: Springer.

Okita, S. Y., Ng-Thow-Hing, V, & Sarvadevabhatla, R. K. (2011). Multimodal approach to affective human-robot interaction design with children. *ACM Transactions on Interactive Intelligent Systems (TiiS), 1*(1), Article 5*,* 1-29.

Okita, S. Y., & Jamalian, A. (2011). Current challenges in integrating educational technology into elementary and middle school mathematics education. *Journal of Mathematics Education at Teachers College*, *2*(2), 49-58.

Gordon, A. M., & **Okita, S. Y.** (2010). Augmenting pediatric constraint-induced movement therapy and bimanual training with video gaming technology. *Technology and Disability*, *IOS Press, 22*, 179-191.

Okita, S. Y. (2010). E-collaboration between people and technological boundary objects: A new learning partnership in knowledge construction. In B. Ertl (Ed.), *Technologies and practices for constructing knowledge in online environments: Advancements in learning* (pp. 133-167). Hershey, PA: IGI Global.

Schwartz, D. L., Chase, C., Chin, D. B., Oppezzo, M., Kwong, H. Y., **Okita, S. Y.**, Biswas, G., Roscoe, R., Jeong, H., & Wagster, J. (2009). Interactive metacognition: Monitoring and regulating a teachable agent. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), *Handbook of metacognition in education* (pp. 340-358). New York, NY: Routledge.

Okita, S. Y., & Schwartz, D. L. (2006). Young children's understanding of animacy and entertainment robots. *International Journal of Humanoid Robotics (IJHR), World Scientific, 3*(3), 393-412.

Okita, S. Y. (2004). Effects of age on associating virtual and embodied toys. *CyberPsychology & Behavior*, *7*(4), 464-471.

Okita, S. Y., & Tokuda, H. (2001). A virtual therapeutic environment with user projective agents. *CyberPsychology & Behavior, 4(*1), 155-167.

MAJOR WORKS PUBLISHED IN PEER REVIEWED PROCEEDINGS

Hu-Au, E., **Okita, S.Y.** (in press 2020). Exploring Differences in Student Learning and Behavior Between Real-Life and Virtual Reality Chemistry Laboratory Experiments. In M. Gresalfi, & I. Horn (Eds.), *Proceedings of the 18th International Conference of the Learning Sciences (ICLS)*. Nashville, TN: Vanderbilt University: ISLS.

Okita, S. Y. (2015). Young children's preconceived notions about robots, and how beliefs may trigger children's thinking and response to robots. *Proceedings of the 24th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)* (pp. 728-733). August 31-September 4, Kobe, Japan. DOI: 10.1109/ROMAN.2015.7333690

Okita, S. Y., & Jamalian, A. (2012). Learning from the folly of others: Learning to self-correct by monitoring the reasoning of projective pedagogical agents. In J. Aalst, K. Thompson, M. J. Jacobson, & P. Reimann (Eds.), *Proceedings of the 10th International Conference of the Learning Sciences (ICLS)*, Vol. 2 (pp. 281-285). Sydney, Australia: University of Sydney: ISLS.

Miyake, N., & **Okita, S. Y.** (2012). Robot facilitation as dynamic support for collaborative learning. In J. Aalst, K. Thompson, M. J. Jacobson, & P. Reimann (Eds.), *Proceedings of the 10th International Conference of the Learning Sciences (ICLS)*. Vol. 2 (pp. 57-63), Sydney, Australia: University of Sydney: ISLS.

Okita, S. Y., Ng-Thow-Hing, V., & Sarvadevabhatla, R. K. (2012). Captain may I? Proxemics study examining factors that influence distance between humanoid robots, children, and adults during human-robot interaction. *Proceedings of the 7th ACM/IEEE International Conference on Human-Robot Interaction (HRI)* (pp.203-204). March 6-8, Boston, MA.

Ng-Thow-Hing, V., Luo, P., & **Okita, S. Y.** (2010). Synchronized gesture and speech production for humanoid robots. *Proceedings of the 2010 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (pp. 4617-4624). October 18-22, Taipei, Taiwan.

Sarvadevabhatla, R. K., Ng-Thow-Hing, V., & **Okita, S. Y.** (2010). Extended duration human-robot interaction: Tools and analysis. *Proceedings of the 19th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)* (pp. 7-14). September 12-15, Viareggio, Italy. DOI: 10.1109/ROMAN.2010.5598676

Okita, S. Y., Ng-Thow-Hing, V., & Sarvadevabhatla, R. K. (2009). Learning together: ASIMO developing an interactive learning partnership with children. *Proceedings of the 18th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)* (pp. 1125-1130). September 27-October 2, Toyama, Japan.

Okita, S. Y., Bailenson, J., & Schwartz, D. L. (2008). Mere belief in social action improves complex learning. In P. A. Kirschner, F. Prins, V. Jonker, & G. Kanselaar (Eds.),

Proceedings of the 8th International Conference for the Learning Sciences, *Vol. 2* (pp. 132-139). Utrecht, The Netherlands: ISLS.

Okita, S. Y., Bailenson, J., & Schwartz, D. L. (2007). The mere belief of social interaction improves learning. In D. S. McNamara & J. G. Trafton (Eds.), *Proceedings of the 29th Meeting of the Cognitive Science Society* (pp. 1355-1360). Nashville, TN.

Okita, S. Y., & Schwartz, D. L. (2006). When observation beats doing: Learning by teaching. In S. Barab, K. Hay, & D. Hickey (Eds.), *Proceedings of the 7th International Conference of the Learning Sciences*, *Vol. 1* (pp. 509-515). Mahwah, NJ: Erlbaum.

Okita, S. Y., Schwartz, D. L., Shibata, T., & Tokuda, H. (2005). Exploring young children's attributions through entertainment robots. *Proceedings of the 14th IEEE International Workshop on Robots and Human Interactive Communication (RO-MAN)* (pp. 390-395). Nashville, TN. ISBN: 0-7803-9275-2.

SECONDARY WORKS PUBLISHED IN PEER REVIEWED PROCEEDINGS

Ng-Thow-Hing, V., Sarvadevabhatla, R. K., & **Okita, S.Y.** (2011). The Learning With Kids Project: Retrospective and status report. *Proceedings in Robotics: Science and Systems Conference (RSS)*. Workshop on human-robot interaction: Perspectives and contributions to robotics from the human sciences. June 27-July1, Los Angeles, CA, USA.

Okita, S. Y., Ng-Thow-Hing, V., & Sarvadevabhatla, R. K. (2010). Learning with sociable robots and technology: developing an interactive learning partnership between humanoid robots and children. *The 5th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. Workshop on Learning and Adaptation of Humans in HRI (pp. 1-4). March 2-5, Osaka Japan.

Okita, S. Y., & Schwartz, D. L. (2006). Learning by teaching: When passive observing through a medium can be more effective than doing. *Proceedings of the 5th International Conference of the Cognitive Science (ICCS)* (pp. 171-172). Vancouver, Canada.

Okita, S. Y. (2004). Accuracy and transfer in associating virtual and embodied toys. In Y. B. Kafai, W. A. Sandoval, N. Enyedy, A. S. Nixon, & F. Herrera (Eds.), *Proceedings of the 6th International Conference of the Learning Sciences (ICLS)* (p. 625). Mahwah, NJ: Erlbaum.

Okita, S. Y., & Tokuda, H. (1998). The cyber-therapy model. In *Proceedings of the 3rd IEEE Multimedia Technology & Applications Conference (MTAC)* (pp. 116-120). Anaheim, CA. ISBN: 0-7803-9915-3/98.

Okita, S. Y., & Tokuda, H. (1998). Psychotherapy with virtual pet agents: The PSY-AAAT prototype system. In *Proceedings of the 3rd Asia Pacific Computer Human Interaction*

(APCHI) (pp. 403-408). Shonan Village Center, Kamakura, Japan. ISBN: 0-8186-8347-3/98.

PEER REVIEWED CONFERENCE PRESENTATIONS

Hu-Au, E., **Okita, S.Y.** (2020, April accepted). *Comparing Learning Between Virtual Reality and Real-Life Chemistry Labs.* American Educational Research Association (AERA), San Francisco, CA.

Okita, S. Y. (2017, October). *Engagement and Motivation.* Workshop on Robots 4 Learning (R4L), EPFL, Lausanne, Switzerland. https://r4l.epfl.ch/swiss-r4l

Okita, S. Y. (2016, August). *Humans, Avatars, and Robots as Peer Learners*. Workshop on Robots 4 Learning (R4L) The 25th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN). August 26-31, New York, U.S.A.

Okita, S. Y., Ng-Thow-Hing, V., & Sarvadevabhatla, R. K. (2011, July). *Designing affective engagement in human-robot interaction with children.* The 9th Int'l Conference on Computer-Supported Collaborative Learning (CSCL), Workshop on Robotics for CSCL, Hong Kong, China.

Okita, S. Y. (2009, April). *Learning to self-monitor by monitoring others using projective pedagogical agents.* American Educational Research Association (AERA), San Diego, CA.

Okita, S. Y., Bailenson, J., & Schwartz, D. L. (2008, April). *Agent and avatar: Does belief of being social or socially relevant action lead to learning?* American Educational Research Association (AERA), New York, NY.

Okita, S. Y. (2004, April). *Effects of age on associating virtual and embodied toys.* American Educational Research Association (AERA), San Diego, CA.

INVITED PRESENTATIONS

Instructional Design for Educational Human-Robot Interactions (2020, February). Invited talk at Grove School of Engineering, the City College of New York (CCNY). New York.

Learning with Sociable Artifacts (2019, November). Designing SFC Spirits Speaker Series, Keio University, Japan.

Tools are Just Objects Unless Used Purposefully (2019, October). Artificial Intelligence (AI) in Education Conference, Teachers College, Columbia University, New York.

Learning with Pedagogical Robots and Agents (2019, September). Future of Childhood Speaker Series, Joan Ganz Cooney Center, Sesame Workshop.

Social Implications on Learning Using Technological Artifacts (2019, September). Jacobs Foundation Workshop on Social Learning. Society for Research in Child Development (SRCD)

Women in STEAM (2019, April). Women in Robotics. FIRST Tech Challenge (FTC) Robotics competition. Nightingale-Bamford School. New York.

Computational Approach to Learning with Social Pedagogical Artifacts (2019, February). Invited talk at Instituto Superior Técnico Universidade de Lisboa, Portugal.

Human-Robot Interaction Design for Learning (2019, February). Invited talk at Grove School of Engineering, the City College of New York (CCNY). New York.

From Research Findings to Practice: Educational Technology in the STEM Subject Area (2018, February). Invited speaker at Guangdong principal delegation at Teachers College, Center on Chinese Education, at Teachers College, Columbia University. New York.

Sociable Artifacts in Learning and Behavior (2017, November), Invited speaker at Brown-bag Speaker Series, New York Hall of Science (NYSCI). New York.

Social Acceptance of Robots (2017, November). Invited speaker at Robotics Program Speaker Series, Montclair State University. New Jersey

Learning with Sociable Artifacts (2017, September). Keynote speaker at Robotics and Computer Science Workshop, Grove School of Engineering, the City College of New York (CCNY). New York.

Therapeutic robot companions as social agents for reducing pain and anxiety in pediatric patients. (2015, February). St. Mary's Hospital for Children in Bayside New York, NY.

Robots as Learning Partners (2014, April). Where the Future Comes First. At the Academic Festival 2014 Faculty Showcase, Teachers College, Columbia University. New York.

In search for the ideal peer learner (2013, May). Innovation Showcase: Robots as Peer Learners. At the Education Writers Associations National Conference, Stanford University, California.

Learning with sociable artifacts that make us more human (2013, March). Invited talk at Graduate School of Education and School of Information, University of California, Berkeley.

Multimodal approach to facilitating affective human-robot interactions (2012, November). Computer Science Department, Columbia University. New York.

Gaming technology, culture and learning (2011, November). NYC Department of Education After School Professional Development Program: Contemporary Japan: Pop Culture, High Tech Culture, and 21st Century Teaching Skills, Japan Society, New York.

Androids, humanoids, robots and learning (2011, November). NYC Department of Education After School Professional Development Program: Contemporary Japan: Pop Culture, High Tech Culture, and 21st Century Teaching Skills, Japan Society, New York.

Learning with sociable robots and technology. (2010, March). 5th ACM/IEEE International Conference on Human-Robot Interaction (HRI): 2010 Workshop on Learning and Adaptation of Humans in HRI. Osaka, Japan.

Learning to self-correct by monitoring the behavior of others using pedagogical agents. (2010, March). Cognitive Connection, Teachers College, Columbia University. New York.

Robots in education. (2010, February). Casual Conversations, Teachers College, Columbia University. New York.

Androids, humanoids, robots, and learning. (2009, October). Dewey Circle Reception, Teachers College, Columbia University. New York.

Learning from sociable robots and how children interact with technology. (2009, October). Honda Research Institute Japan. Wako Saitama, Japan.

Learning partnerships between individuals and technology, and how technology intersects with learning and instructional processes. (2008, December). Ed Lab, Teachers College, Columbia University. New York.

Agent and avatar: Does belief of being social or socially relevant action lead to learning? (2008, March). School of Education, University of Massachusetts. Boston.

Learning from virtual people. (2007, January). Human-Computer Interaction Institute (HCII), School of Computer Science, Carnegie Mellon University. Pittsburgh, PA.

*The development of middleware in creating networked virtual therapeutic environmen*ts. (2000, August). Workshop on Emerging Technologies, Carnegie Mellon University. Pittsburgh, PA.

Projective agent computing. (1999, August). Workshop on Emerging Technologies, Carnegie Mellon University. Pittsburgh, PA.

HONORS AND AWARDS

2011-2012 Dean's Faculty Diversity Research Award**,** *Digital divide and identity development: Use of math, science and technology as cultural learning tools in elementary school classrooms to address issues in gender, culture and social economic status-related stereotypes.*

2008 Best Paper Award, 8th International Conference of the Learning Sciences, *Mere belief in social action improves complex learning.*

GRANTS

2020 (Under Review) Partner Investigator, Australian Research Council Discovery Project, *Immersive Sense-making: Enabling Situated Science Collaboration with Remote Sensing Data in Immersive Reality*

2016-2019 Co-Primary Investigator, Google Virtual Reality Research Program, $125,000, *STEM-VR Scientist Space Expedition Project: Implementation of high quality STEM VR Content in Classrooms*

2016-2017 Primary Investigator, Columbia University Provost Investment Fund, $20,000, *International Conference on Robot and Human Interactive Communication at Teachers College.*

2015-2016 Primary Investigator, Columbia University Provost Investment Fund, $20,000, *Human-Centered Approach to Robotics Research in Education, Psychology, and Health.*

2011-2012 Primary Investigator, Columbia University Dean's Faculty Diversity Research Award, $2,500, *Digital divide and identity development: Use of math, science and technology as cultural learning tools in elementary school classrooms.*

2010-2012 Investigator, National Science Foundation (NSF), $999,281, *POlar learning and responding: POlar climate partnership*.

2009-2011 Primary Investigator, Honda Research Institute, Industrial Research Grant, $155,250, *Learning partnership between children and robots*.

2008-2011 Primary Investigator, Research Institute of Digital Media and Content, $86,000, Global Studio Project between Columbia University and Keio University.

2005-2009 Primary Investigator, Research Institute of Digital Media and Content, $66,609, Global studio project with Stanford Center for Innovations in Learning. Distance Learning Global Studio Project.

2004 Primary Investigator, Advanced Industrial Science and Technology (AIST) collaborative research project, $8,000, Experiment equipment funding (PARO Robot).

2003 Primary Investigator, Sony Entertainment America collaborative research project, estimated worth $8,000, Experiment equipment funding (AIBO robots).

2003 Primary Investigator, Omron Corporation collaborative research project, estimated worth $2,000, Experiment equipment funding (NECORO).

SERVICE TO THE COLLEGE, PROFESSION AND COMMUNITY

Profession and Community

Standing Steering Committee Member for the IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN) 2017-present

General Chair, IEEE International Workshop on Robot and Human Interactive Communication (RO-MAM), 2016

Editorial board member, *International Journal of Robots, Education, and Art* (IJREA), 2012-present

Reviewer, *Journal of the Learning Sciences*, 2012-present

Reviewer, *Computers and Education Journal*, 2012-present

Reviewer, *International Journal of Social Robotics*, 2013-present

Reviewer, *Journal of Human-Robot Interaction (JHRI)*, 2012-present

Reviewer, *Cyberpsychology, Behavior, and Social Networking*, 2012-present

Reviewer, *Educational Psychology Review Journal*, 2009-present

Program Review Panel, National Science Foundation (NSF), 2010-present

Proposal Reviewer, International Conference of the Learning Sciences (ICLS), 2010-present

Proposal Reviewer, American Educational Research Association (AERA), 2009-present

Proposal Reviewer, IEEE Int'l Conference on Human-Robot Interaction (HRI), 2012-present

Proposal Reviewer, IEEE Int'l Conference on Robotics and Automation (ICRA), 2010-present

Proposal Reviewer, IEEE Int'l Workshop on Robot and Human Interactive Communication (Ro-Man), 2009-present

On-site Organizer, Mozilla 24 World Wide Continuous Event, Stanford University, Twenty-four hour worldwide conference hosted by Mozilla's organizations in Japan, U.S. and Europe, 2007, http://www.mozilla24.com/

On-site Organizer, Global Studio Project International Symposium, *The Digital Information Revolution to the Environmental Energy Revolution,* 2008

Publicity Chair, IEEE Virtual Reality (IEEE-VR) Conference Committee, 2003

College

Program Director, Communication, Computing, and Technology in Education, Department of Mathematics, Science and Technology(MST) 2016-present

Member, Associate Dean for Research Search Committee, Teachers College 2019-present

Chair, FEC Personnel Committee, Teachers College 2019-present

Member, Director of International Services Search Committee, Office of International Students and Scholars (OISS) 2018-2019

Chair, Communication, Computing, and Technology in Education(CMLTD), Faculty Search Committee, Department of Mathematics, Science and Technology 2016-2018

Member, Mathematics, Science and Technology (MST) Department Representative, FEC APS Committee 2015-2016

Member, Communication, Computing, and Technology in Education, Faculty Search Committee, Department of Mathematics, Science and Technology 2013-2014

Member, Cognitive Studies Faculty Search Committee,
Department of Human Development 2012-2013
Member, Director of Academic Administration (DAA) Search Committee,
Department of Mathematics, Science and Technology 2011-2012
Member, Teachers College, Institutional Review Board Committee 2008-2012
Member, Mathematics Education Faculty Search Committee,
Department of Mathematics, Science and Technology 2010-2011
Member, TESOL Japan Interim Director Search Committee,
Department of Arts and Humanities 2008-2009

PROFESSIONAL SOCIETIES

International Society of the Learning Sciences (ISLS)

Cognitive Science Society

American Educational Research Association (AERA)

Association for Computing Machinery (ACM)

Institute of Electrical and Electronics Engineers (IEEE)

Updated: December 2019