Diane Jass Ketelhut

Associate Professor, Science, Technology and Math Education

djk@umd.edu

EDUCATION

Harvard Graduate School of Education, Cambridge, Ma.
Ed.D., Learning and Teaching, June 2006
--Dissertation, *Do Students with Higher Self-Efficacy Exhibit Greater and More Diverse Scientific Inquiry Skills: An Exploratory Investigation in River City, a Multi-User Virtual Environment.*
--Dissertation Committee: Chris Dede, chair; John Willett; David Perkins
--Qualifying Paper, *Assessing Scientific and Technological Self-efficacy: A Measurement Pilot*, passed 2004.

University of Virginia, Charlottesville, Va.
M.Ed., Science Curriculum/Instruction.
--Summary Paper, *Designing an integrated high school science curriculum*
--Advisor: Dr. Ertle Thompson.

Brown University, Providence, RI.
Sc.B., Biomedical Sciences.

PROFESSIONAL POSITIONS

Associate Professor, Science, Technology and Math Education
University of Maryland, College Park, Md. 2011-present
Director, Center for Science and Technology in Education
University of Maryland, College Park, Md. 2015-present
Secondary Education Coordinator, Teaching and Learning, Policy and Leadership Department
University of Maryland, College Park, Md. 2012-2015
Lead Professor of Science Education
Temple University, Philadelphia, Ma. 2010-2011
Assistant Professor of Science Education
Temple University, Philadelphia, Ma. 2006-2011
Instructor
Harvard University, Cambridge, Ma. 2006
Course designed--*Topics in Science Education: Exploring the teaching of Inquiry*
Director of Research for NSF-Funded Multi-User Virtual Environment Project
Harvard University, Cambridge, Ma. 2006
Senior Instructor
Cambridge College, Cambridge, Ma. 2004
Project Director for NSF-Funded Multi-User Virtual Environment Project
Harvard University, Cambridge, Ma. 2003-2005
--Supervised project team of 10-15 members
Co-Instructor with Professor Chris Dede
Harvard University, Cambridge, Ma. 2002-2004
--*T-502: Learning Media that Bridge Distance and Time*
--*T-505: Leadership in Educational Technology Policy*
Teaching Fellow

Harvard University, Cambridge, Ma. 2002-2004
--*S-030: Intermediate Statistics course* for Professor Suzanne Graham
--*S-052: Applied Data Analysis* for Professor Suzanne Graham
--*T-540: Cognition and the art of Instruction* for Professor David Perkins

Program Analyst for Senior Lecturer Kay Merseth, Director, Teacher Education Program
Harvard University, Cambridge, Ma. 2002

Teacher Education Program Advisor
Harvard University, Cambridge, Ma. 2000-2002

Graduate Research Assistant for Professor Chris Dede
Harvard University, Cambridge, Ma. 2001-2003

Co-chair of the Teacher Network at Harvard University
Harvard University, Cambridge, Ma. 2001-2002

Independent Consulting Group, 1998-1999
--Co-leader of an in-service seminar on block scheduling for teachers
--Advisor to technology company on staff development

Summary of positions prior to 1998

High School Science Teacher
Foxboro High School, Foxboro, Ma. 3 years
--Taught physical science and biology

High School Science Teacher
Providence Day School, Charlotte, NC. 2 years
--Taught chemistry and physical science
--Team-taught biology
--Member of school evaluation committees for accreditation

High School Science Curriculum Specialist and Teacher
Tandem School, Charlottesville, Va. 3 years
--Responsible for curriculum in biology and chemistry
--In charge of science department budget and equipment
--Long Range Planning Committee member

Biology Laboratory Instructor
Piedmont Virginia Community College, Charlottesville, Va. 2 years

High School Science and Math Teacher
Montini High School, Lombard, Illinois 3 years
--Taught physics, biology, geometry, and psychology
--Designed and implemented physics and remedial biology program

Junior High School Math Teacher
Milwaukee Public Schools, Milwaukee, Wisconsin 1 year

Immunology Research Assistant—2 years
Duke University and University of Connecticut
--Performed independent tumor research
--Team member on multiple sclerosis research project

EXTERNALLY SPONSORED RESEARCH

Funded:

Increasing the Interest of Students from Underrepresented Populations for Cybersecurity
Senior Collaborator (PI: Dr. Michel Cukier)
LTS DO55
$142,629

University of Maryland. 2018-2020.

STRATEGIES: The Bessie Coleman Project - Using Computer Modeling and Flight Simulation to Create STEM Pathways
Subcontract Principal Investigator (Grant PI: Dr. Jackie Leonard, University of Wyoming)
National Science Foundation
$120,447.50
University of Maryland (subcontract)/University of Wyoming (primary). 2018-2021.

Exploring the Integration of Computational Thinking into Preservice Elementary Science Teacher Education (CT→PSTE)
Principal Investigator
National Science Foundation, STEM+C Program
$1,400,000.00
University of Maryland, College Park, Md. 2017-2020

SAVE Science: Situated Assessment using Virtual Environments for Science Content and Inquiry
Principal Investigator
National Science Foundation, Discovery Research K-12 Program
$2,772,482
University of Maryland, College Park, Md. 2011-2015
Temple University, Philadelphia, Pa. 2008-2011

Educating middle-grades teachers for challenging contexts,$E=mc^2$
Co-Principal Investigator (PI: Dr. Kent McGuire)
Department of Education, Transition to Teaching Program
$3,014,360
Temple University, Philadelphia, Pa. 2007-2011

Science in the City: a Proposal for Developing Future Scientists
Co-Principal Investigator (PI: Dr. Susan Varnum)
National Science Foundation, Academy for Young Scientists Program
$799,125
Temple University, Philadelphia, Pa. 2006-2010

Studying Robust-Design Strategies for Developing Innovations Effective and Scalable in Challenging Classroom Settings
Principal Investigator, Subcontract (PI of grant: Dr. Chris Dede-1.5M total funded)
$28,000
Temple University, Philadelphia, Pa. 2006-2008

Studying Situated Learning and Knowledge Transfer in a Multi-User Virtual Environment
Project Director (PI: Dr. Chris Dede)
$800,000
Harvard University, Cambridge, Ma. 2003-2005

INTERNALLY FUNDED RESEARCH

Advance Grant: Integrating scientific and educational goals in a broad study of animal regeneration
Co-Principal Investigator (PI: Dr. Alexa Bely)
ADVANCE grant at University of Maryland
$20,000
University of Maryland, College Park, Md. 2013-14

Relationship between data-gathering behaviors in an immersive virtual environment and a performance assessment of scientific inquiry
Principal Investigator

$1,000
Temple University, Philadelphia, Pa. 2006-2007

FELLOWSHIPS

STEM Faculty Fellow
University of Maryland, 2011-13

Inquiry Teaching for Depth and Coverage in River City
Dean's Summer Fellowship, 2005
$3,000
Harvard University, Cambridge, Ma.

PUBLICATIONS (Doctoral students and postdoctoral fellows are in red)

Books:

Ketelhut, D.J., and Tutwiler, M.S. (2018). *Ed Psych Insights: Science Learning and Inquiry with Technology.* Routledge.

Peer-reviewed Journals:

Ketelhut, D.J., Mills, K., Hestness, E., Plane, J., & McGinnis, J.R. (under review). *Teacher Change Following a Professional Development Experience in Integrating Computational Thinking into Elementary Science*.

Piety, P. & Ketelhut, D.J. (under review). *Active Data Use and Its Impact on Practice in P-20 Education Settings: A Cross-Disciplinary Literature Review*.

Hestness, E., **Ketelhut, D.J.**, McGinnis, J.R., & Plane, J. (2018). Intersecting Discourses within an Elementary Teacher Professional Development Experience on Computational Thinking in Science Education. *Journal of Technology and Teacher Education 26*(3), 411-435.

Mills, K., Seligman, E., and **Ketelhut, D.J.** (2017). Using apps that support scientific practice. *The Science Teacher 84*(9), 14-17.

Bergey, B. W., **Ketelhut, D.J.,** Liang, S., Natarajan, U., & Karakus, M. (2015). Scientific inquiry self-efficacy and video game self-efficacy as predictors and outcomes of middle school boys' and girls' performance in a science assessment in a virtual environment. *Journal of Science Education and Technology, 24*(5), 696-708.

Schifter, C.C., Natarajan, U., **Ketelhut, D.J**., & Kirchgessner, M. (2014). Data-driven decision making: Facilitating teacher use of student data to inform classroom instruction. *Contemporary Issues in Technology & Teacher Education 14*(4), 419-432.

Ryu, Minjung, **Ketelhut, D.J**. (2014). Engage. Elaborate. Evaluate! Virtual Environment-Based Assessments of Science Content and Practices. *Science Scope 37*(5), 44-49.

Shelton, A., Natarajan, U., Willard, C., Kane, T., **Ketelhut, D.J**., Schifter, C. (2013). Strategic Scaffolding for Scientific Inquiry. *Journal of Computers in Mathematics and Science Teaching 32*(4), 425-439.

Ketelhut, D.J., Nelson, B., Schifter, C.C., & Kim, Y. (2013). Improving science assessments by situating them in a virtual environment. *Education Sciences 3*(2), 172-192.

Schifter, C.C., **Ketelhut, D.J**., & Nelson, B.C. (2012). Presence and middle school students' participation in a virtual environment to assess science inquiry. *Educational Technology & Society*. *15* (1), 53–63.

Ketelhut, D.J., & Schifter, C. (2011). Game-Based Learning and Teachers: Improving understanding of how to increase efficacy of adoption. *Computers and Education 56*, 539-546.

Ketelhut, D.J., and Nelson, B. (2010). Designing for Real-World Scientific Inquiry in Virtual Environments. *Educational Research 52*(2), 151-167.

Nelson, B., **Ketelhut, D.J.,** and Schifter, C. (2010). Exploring Cognitive Load in Immersive Educational

Games: The SAVE Science Project. *International Journal for Gaming and Computer Mediated Simulations 2* (1), 31-39.

Ketelhut, D.J., Nelson, B., Clarke, J., & Dede, C. (2010). A Multi-user virtual environment for building higher order inquiry skills in science. *British Journal of Educational Technology 41*(1), 56-68.

Dede, C., **Ketelhut, D.J.**, Whitehouse, P., Breit, L., & McCloskey, E. (2009). A research agenda for online teacher professional development. *Journal of Teacher Education 60* (1), p. 8-19.

Nelson, B., and **Ketelhut, D. J.** (2008). Exploring embedded guidance and self-efficacy in educational multi-user virtual environments. *International Journal of computer supported collaborative learning 3* (4), p 413-427.

Ketelhut, D. J., & Niemi, S. M. (2007). Emerging Technologies in Education and Training: Applications for the Laboratory Animal Science Community. *Institute for Laboratory Animal Research Journal 48(2)*, p 163-169.

Nelson, B., and **Ketelhut, D. J**. (2007). Scientific Inquiry in Multi-user virtual environments. *Educational Psychology Review 19(3),* p. 265-283.

Ketelhut, D. J. (2007). The Impact of Student Self-Efficacy on Scientific Inquiry Skills: An Exploratory Investigation in River City, a Multi-User Virtual Environment. *Journal of Science Education and Technology, 16(1),* 99-111.

Clarke, J., Dede, C., **Ketelhut, D.J.,** Nelson, B., & Bowman, C. (2006). A design-based research strategy to promote scalability for educational innovations. *Educational Technology,* 46(3), 27-36

Nelson, B., **Ketelhut, D.J.,** Clarke, J., Bowman, C., Dede, C. (2005). Design-based Research Strategies for Developing a Scientific Inquiry Curriculum in a Multi-User Virtual Environment. *Educational Technology, 45 (1),* 21-27.

Non Peer-reviewed Journals:

Ketelhut, D.J., Schifter, C. Karakus, M., Natarajan, U., Shelton, A., Teufel, C., Nelson, B., Foshee, C., Kim, Y., & Slack, K. (2012). Feature Article: Using Immersive Virtual Environments to Create Immersive Science Assessments. *Journal of Immersive Education, 1*(1). Accessible at: http://JiED.org/1/1/3

Galas, C., & **Ketelhut, D. J.** (2006). River City, The MUVE. *Leading and Learning with Technology, 33(7),* p 31.

Ketelhut, D., Clarke, J., Dede, C., Nelson, B., & Bowman, C. (2005). Extending Library Services through Emerging Interactive Media. *Knowledge Quest, 34 (1),* p 29-32.

Ketelhut, D., & Dede, C. (2003, June). Of Cars and Computers: Breakthrough Thinking in Education. *Massachusetts Association for Supervision and Curriculum Development: Perspectives,* pp. 16-20.

Book Chapters:

Ketelhut, D. J. (in press). Improving science education through developing technological pedagogical content knowledge in teachers. In O. O. Adesope, & A. G. Rud (Eds), *Contemporary Technologies in Education - Maximizing Student Engagement, Motivation, and Learning.* Palgrave Macmillan.

Ketelhut, D.J., & Nelson, B. (2018). Designing, Implementing and Researching the Effects of Narrative-Based Assessment in Virtual Environments. In H. Jiao & R. W. Lissitz (Eds.), *Technology Enhanced Innovative Assessment: Development, Modeling, and Scoring from an Interdisciplinary Perspective.* Charlotte, NC: Information Age Publisher. p. 53-70.

Nelson, B., **Ketelhut, D.J**., Clarke, J., Bowman, C., & Dede, C. (2013). Design-based research strategies for developing a scientific inquiry curriculum in a multi-user virtual environment. In T. Plomp, & N. Nieveen (Eds.), *Educational design research – Part B: Illustrative cases*. Enschede, the Netherlands: SLO. p. 221-234.

Nelson, B., **Ketelhut**, **D**., Kim, Y., Foshee, C., & Slack, K. (2012). Design principles for creating educational virtual worlds. In C. Mouza and N. Lavigne (Eds.) *Emerging Technologies for the Classroom: A Learning Sciences Perspective.* P. 205-223.

Newton, K. J., **Ketelhut, D. J.,** Pecore, J., and Jubilee, S. (2012). Components that Contribute to Mathematics Teaching Self-Efficacy during an Alternative Certification Program. In S. Britner (Ed.), *Self-Efficacy in School and Community Settings*. New York. Nova Science Publishers, p. 107-124.

Ketelhut, D.J. (2010). Assessing gaming, computer and scientific inquiry self-efficacy in a virtual environment. In L.A. Annetta and S. Bronack (Eds.), *Serious Educational Game Assessment: Practical Methods and Models for Educational Games, Simulations and Virtual Worlds*. Amsterdam, The Netherlands. Sense Publishers. p. 1-18.

Ketelhut, D.J., Clarke, J., and Nelson, B. (2010). The development of River City, a multi-user virtual environment-based scientific inquiry curriculum: historical and design evolutions. In M. J. Jacobson and P. Reimann (Eds.), *Designs for Learning Environments of the Future: International perspectives from the learning sciences.* Springer Publishing Company. p. 89-110.

Whitehouse, P., McCloskey, E., and **Ketelhut, D.J.** (2009). Online Pedagogy Design and Development: New Models for 21st Century Online Teacher Professional Development. In J.O. Lindberg & A.D. Olofsson (Ed.), *Online Learning Communities and Teacher Professional Development: Methods for Improved Education Delivery.* IGI Global Publishing. p 247-262.

Ketelhut, D. J., Clarke, J., Nelson, B., & Dukas, G. (2008). Using Multi-User Virtual Environments to Simulate Authentic Scientific Practice and Enhance Student Engagement. In L. Annetta (Ed.), *Serious Educational Games: From Theory To Practice*. Rotterdam, The Netherlands: Sense Press. p 25-38.

Nelson, B., **Ketelhut, D. J.,** Clarke, J., Dieterle, E., Dede, C., & Erlandson, B. (2007). Robust Design Strategies for Scaling Educational Innovations: The River City MUVE Case Study. In B.E. Shelton & D.A. Wiley, *The Design and Use of Simulation Computer Games in Education.* Rotterdam, The Netherlands: Sense Press. p 209-231.

Ketelhut, D. J., Dede, C., Clarke, J., & Nelson, B. (2007). Studying Situated Learning in a Multi-User Virtual Environment. In E. Baker & J. Dickieson & W. Wulfeck & H. O'Neil (Eds.), *Assessment of Problem Solving Using Simulations*: Lawrence Erlbaum Associates. p 37-58.

Dede, C., Dieterle, E., Clarke, J., **Ketelhut, D**., & Nelson, B. (2007). Media-based learning styles. In M. Moore (Ed.), *Handbook of distance education* (Second ed.). Mahwah, NJ: Lawrence Erlbaum Associates. p 339-352.

Ketelhut, D. J., McCloskey, E., Dede, C., Breit, L., & Whitehouse, P. (2006). Implications for Online Teacher Professional Development. In C. Dede (Ed.), *Online Professional Development for Teachers: Emerging Models and Methods*. Cambridge, Ma: Harvard Education Press.

Whitehouse, P., Breit, L., McCloskey, E., **Ketelhut, D. J.,** & Dede, C. (2006). An Overview of Current Findings From Empirical Research on Online Teacher Professional Development. In C. Dede (Ed.), *Online Professional Development for Teachers: Emerging Models and Methods*. Cambridge, Ma: Harvard Education Press.

Ketelhut, D.J., Whitehouse, P., Dede, C., & Brown-L'Bahy, T. (2005). Designing a Distributed Learning Experience. In C. Howard & J. Boettcher & L. Justice & K. Schenk & G. Berg & P. Rogers (Eds.), *Encyclopedia of Online Learning and Technology*: Idea Group Reference.

Dede, C., Brown-L'Bahy, T., **Ketelhut, D.J**., & Whitehouse, P. (2003). Distance Learning (Virtual Learning). In H. Bidgoli (Ed.), *The Internet Encyclopedia*. New York: John Wiley & Sons. p 549-560.

Reports, white papers, and editorials:

de Freitas, S., and **Ketelhut, D.J.** (2014). Introduction for the Journal of Information Sciences special issue on serious games. *Information Sciences 264,* 1-3.

Ketelhut, D.J., Yates, A., Sil, A., & Timms, M. (2012). Applying Educational Data Mining in E-Learning Environments. Section within the New Measurement Paradigm Report,

http://cadrek12.org/sites/default/files/NMP%20Report%20041412_0.pdf, p 47-52.

Timms, M., Clements, D., Gobert, J., **Ketelhut, D.J.,** Lester, J., Reese, D., and Wiebe, E. (2012). New Measurement Paradigms. A report of the NMP group prepared for the Community for Advancing Discovery Research in Education. http://cadrek12.org/sites/default/files/NMP%20Report%20041412_0.pdf

Ketelhut, D.J. (2009). Rethinking Science Learning: a needs assessment. An NAS-commissioned paper. http://www7.nationalacademies.org/bose/Ketelut_Gaming_CommissionedPaper.pdf

Book Reviews

Kirchgessner, M. & **Ketelhut, D.J.** (2012). In Video Games and Learning: Teaching and Participatory Culture in the Digital Age. *Science Education 96*(5), p 963–965.

Ketelhut, D. J. (2010). Eric Klopfer: Augmented Learning: Research and Design of Mobile Educational Games. *Journal of science education and technology 19*(2). p 212.

Refereed proceedings:

Ketelhut, D.J., and Nelson, B. (2016). Blending Formal and Informal Learning Environments: The Case of SAVE Science. *Proceedings of the 10th European Conference on Games Based Learning.* England: ACPI.. 314-318.

Mills, K., **Ketelhut, D.J.,** and Natarjan, U. (2015). Exploring How Students Construct Scientific Explanations During a Classroom Discussion after Implementation of an Immersive Virtual Environment. In O. Lindwall, P. Häkkinen, T. Koschman, P. Tchounikine, & S. Ludvigsen (Eds.), *Exploring the Material Conditions of Learning: The Computer Supported Collaborative Learning (CSCL) Conference Proceedings*, Volume 2. Gothenburg, Sweden: The International Society of the Learning Sciences. 709-710.

Ketelhut, D.J., Nelson, B., Bergey, B., and Ryu, M. (2014). Design and Gender in Immersive Learning Environments. *Proceedings of the 8th European Conference on Games Based Learning*. England: ACI. 265-271.

Ketelhut, D.J. and Nelson, B. (2013). Basketball Trouble: A Game-Based Assessment of Science Inquiry and Content Knowledge Abstract. *Proceedings of the 7th European Conference on Games Based Learning.* England: ACI. p. 155-161.

Natarajan, U., Shelton, A., Kane, T., Willard, C., **Ketelhut, D**. & Schifter, C. (2012). Scaffolding for Scientific Inquiry. In P. Resta (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2012* (pp. 2577-2581). Chesapeake, VA: AACE.

Ketelhut, D.J. and Shelton, A. (2012). Using Immersive Virtual Environments to Assess Science Understanding: The Impact of Contextualization. *Proceedings of the 6th European Conference on Games Based Learning.* England: ACI. p. 235-241.

Natarajan, U., Kirchgessner, M. and **Ketelhut, D.J.** (2012). A Design Strategy for Scaling up Implementations in Virtual Environments. *Proceedings of the 6th European Conference on Games Based Learning.* England: ACI. p. 235-241.p. 640-645.

Ketelhut, D.J., Nelson, B., Yates, A.and Sil, A. (2012). Insights Into Student Learning Using Virtual Environments as Assessments; Datamining SAVE Science. *Proceedings of the 6th European Conference on Games Based Learning.* England: ACI. p.101-102.

Sil, A., Shelton, A., **Ketelhut, D.J**., and Yates, A. (2012) Automatic Grading of Scientific Inquiry. In *Proceedings of the 7th Workshop on Innovative Use of NLP for Building Educational Applications (BEA 7)*, 2012.

Schifter, C.C., **Ketelhut, D.J.,** and Nelson, B.C. (2011). Middle school children participation in an immersive virtual game environment, presence, and Piaget's stages of development. In M. Koehler & P. Mishra (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2011* (pp. 1982-1986). Chesapeake, VA: AACE.

Schifter, C., **Ketelhut, D.J**., & Nelson, B. (2010). Presence, piaget's stages of development and middle

school children participation in an immersive virtual game environment. In Kinshuk, D. G. Sampson, J. M. Spector, P. Isaías, D. Ifenthaler and R. Vasiu (Eds), *Proceedings of the iadis international conference on cognition and exploratory learning in the digital age (*celda 2010). p 79-86.

Ketelhut, D.J., Nelson, B., Schifter, C., and Kim, Y. (2010). Using immersive virtual environments to assess science content understanding: the impact of context. In Kinshuk, D. G. Sampson, J. M. Spector, P. Isaías, D. Ifenthaler and R. Vasiu (Eds), *Proceedings of the iadis international conference on cognition and exploratory learning in the digital age* (celda 2010). p 227-230.

Majerich, D, **Ketelhut, D.J.,** Schifter, C., Nelson, B., and Kim, Y. (2010). Reviving Dewey's "Reflective Thinking" Framework for the Design of Problems in Virtual Learning Environment-based Assessments of Content and Inquiry. *Proceedings of the International Conference on Learning Sciences.*

Schifter, C., **Ketelhut, D**. & Nelson, B. (2010). Presence Theory and Virtual Games: A Case of SAVE Science. In C. Crawford et al. (Eds*.), Proceedings of Society for Information Technology & Teacher Education International Conference 2010*. Chesapeake, VA: AACE. p. 3615-3618.

Ketelhut, D.J. (2010). Assessing Gaming, Computer and Scientific Inquiry Self-efficacy in a Virtual Environment. In C. Crawford et al. (Eds*.), Proceedings of Society for Information Technology & Teacher Education International Conference 2010. Chesapeake, VA: AACE*, p. 1940-1945.

Schifter, C., **Ketelhut, D.J**., and Nelson, B. (2009). Save Science: presence theory and virtual games. *Proceedings of the International Conference on Cognition and Exploratory Learning in the Digital Age*, p 425-28.

Ketelhut, D.J., Nelson, B., and Schifter, C. (2009). Virtual environments for situated science assessment. *Proceedings of the International Conference on Cognition and Exploratory Learning in the Digital Age*, p 507-508.

Ketelhut, D.J., Schifter, C., Varnum, S., & Stull, J. (2009). Introducing Interactive Whiteboards to Urban Teachers. *Proceedings of the 20th International Conference of the Society of informational technology and teacher education*. Chesapeake, Va: AACE. p 3789-3792.

Ketelhut, D.J., Schifter, C., & Nelson, B. (2009). SAVE Science: Situated assessment using virtual environments for science content and inquiry. *Proceedings of the 20th International Conference of the Society of informational technology and teacher education*. Chesapeake, Va: AACE. p 3663-3665.

Schifter, C. & **Ketelhut, D.J.** (2009). Teacher Acceptance of Game-Based Learning in K-12: The Case of River City. *Proceedings of the 20th International Conference of the Society of informational technology and teacher education*. Chesapeake, Va: AACE. p 3836-3842.

Ketelhut, D.J.. Clarke, J., Nelson, B., & Dukas, G. (2008). Rethinking Pedagogy: Using Multi-User Virtual Environments to Foster Authentic Science Learning. *The Proceedings of the Eighth International Conference of the learning Sciences (ICLS).* Mahwah, NJ: Erlbaum.

Schifter, C. & **Ketelhut, D.J**. (2007). Teacher Acceptance of Game-Based Learning in K-12: The Case of River City. *The Proceedings of the 1st European Conference on Game-Based Learning.* England: Academic Conferences Limited. p 251-256.

Nelson, B., and **Ketelhut, D. J.** (2007). Exploring Embedded Guidance and Self-efficacy in Educational Multi-user Virtual Environments. *The proceedings of the computer supported collaborative learning conference, Volume 8.*International society of the learning sciences, US. p

Dede C., Nelson, B., **Ketelhut, D.J.,** Clarke, J., & Bowman, C. (2004). Design-based Research Strategies for Studying Situated Learning in a Multi-User Virtual Environment. *The Proceedings of the Sixth International Conference of the learning Sciences (ICLS).* Mahwah, NJ: Erlbaum. P 158-165.

Dede, C., **Ketelhut, D.J**., & Ruess, K. (2002). Motivation, Usability, and Learning Outcomes in a Prototype Museum-based Multi-User Virtual Environment. In P. Bell & R. Stevens & T. Satwicz

(Eds.), *Keeping Learning Complex: The Proceedings of the Fifth International Conference of the Learning Sciences (ICLS)*. Mahwah, NJ: Erlbaum. p 530-531.

KEYNOTE AND INVITED SESSIONS AND TALKS

Keynotes:

Ketelhut, D.J. (2014, September 26). *Reinventing Science Education through Virtual Worlds: Implications for Teacher Education*. Invited keynote at the TECH-Ed conference, Washington State University, Pullman, Wa.

Ketelhut, D.J. (2012, June). *Using Immersive Virtual Environments to Create Immersive Science Assessments*. Invited keynote at the Immersive Education Summit, Boston, Ma.

Ketelhut, D.J. (2012, May 6). ***Learning to Be Scientific: Reinventing Science Education with Virtual Worlds*.** Invited keynote at the Learning & the Brain conference on Web Connected Minds. Arlington, Virginia.

Ketelhut, D.J. (2010, May 20). *Using games and simulations with teachers as agents for change.* Invited keynote at the conference on Computer games and simulations for the development of professional competency. Malmo, Sweden.

Ketelhut, D.J. (2010, May 19). *Learning to be scientific: Reinventing science education through virtual worlds.* Invited keynote at the conference on Computer games and simulations for the development of professional competency. Malmo, Sweden.

Ketelhut, D.J. (2008, March 18). *From Sim City to Sim Science.* Invited Opening Keynote for the Educause ELI Focus Session.

Ketelhut, D. J. (2006, August 1). *K-12 Distance Education: motivation, current state and outlook.* Invited Keynote address presented at the K-12 Online Teaching Symposium, Madison.

Ketelhut, D. J. (2005). *Emerging Technologies in the Classroom.* Invited keynote for all-day seminar sponsored by Project Arise.

Invited presentations, panels and lectures:

Ketelhut, D.J. (2016, March 16). *Game-Based Assessments of Scientific Inquiry and Content Knowledge.* Invited panelist to RESTEM Center event, Columbia, Mo.

Ketelhut, D.J. (2015, September 28). *Scenario-based Assessments Panel.* Invited panelist to the NAEP Innovations Symposium, Washington D.C.

Ketelhut, D.J. (2015, August 6). *21st Century Education and Technology*. Invited 2-day lecture to the Maryland International Incubator Program participants.

Ketelhut, D.J. (2014, November 11). *Reinventing Science Education through Virtual Worlds*. Invited talk to the Center for the Advanced Study of Communities and Information, College Park, Md.

Ketelhut, D.J. (2014, October 16). *Designing, Implementing and Researching the Effects of Narrative-Based Assessment in Virtual Environments*. Invited presentation to the MARCES Conference, College Park, Md.

Ketelhut, D.J. (2013, October 15). *Learning to Be Scientific: The USA context***.** Invited presentation to the Chinese Principals institute. College Park, Md.

Ketelhut, D.J. (2013, January 20). *Learning to Be Scientific***.** Invited presentation to the Korean Teachers (Daegu) institute. College Park, Md.

Ketelhut, D.J. (2012, November 11). *Learning to Be Scientific: The USA context***.** Invited presentation to the Chinese Principals institute. College Park, Md.

Ketelhut, D.J. (2010, November 9). *Immersive virtual environments*. Invited lecture to Dr. Susan Peterson's doctoral class.

Ketelhut, D.J. (2010, June). *Using Immersive virtual environments for assessment: motivation, affordances and constraints.* Invited presentation for the Games, Learning and Society Conference. Madison, WI.

Ketelhut, D.J. (2010, May 2). *Web 2.0: Research Issues, Results, and Future Directions*. Invited Panelist for the Technology as an Agent of Change in Teaching and Learning SIG at AERA. Denver, Co.

Ketelhut, D.J. (2010, March 30). *Learning to be scientific: reinventing science education through virtual worlds.* Invited presentation at the Department of Education's Math/Science Partnership grant mid-western meeting. New Orleans.

Ketelhut, D.J. (2010, February 23). *Learning to be scientific: reinventing science education through virtual worlds.* Invited presentation at the Department of Education's Math/Science Partnership grant western meeting. San Diego.

Ketelhut, D.J. (2010, January 27). *Learning to be scientific: reinventing science education through virtual worlds.* Invited presentation at the Department of Education's Math/Science Partnership grant eastern meeting. Washington, D.C.

Ketelhut, D.J. (2009, October 6). *Rethinking science learning: a needs assessment.* Invited panelist at the National Academy of Science workshop on simulations and games in science education.

Ketelhut, D.J. (2009, March). *Assessment in Virtual Worlds.* Invited Dinner Panelist for the Taxonomy of Virtual Worlds Workshop. Philadelphia, Pa.

Ketelhut, D.J. (2009, March). *River City and SAVE Science.* Invited presenter for the Taxonomy of Virtual Worlds Workshop. Philadelphia, Pa.

Ketelhut, D.J. (2008, October). *Using Multi-user virtual environments to foster authentic science learning.* Guest Speaker in virtual worlds seminar at University of Pennsylvania.

Ketelhut, D.J. (2008, October). *Learning Outcomes for Middle School Students using River City.* Invited presenter for the Grantmakers for Education Conference. Baltimore.

Ketelhut, D.J. (2008, June). *Considerations for Grants and Research Projects when in Early Career: What You Might Like to Know*. Invited panelist at the Early Career Workshop at the International Conference of the Learning Sciences, Utrecht.

Ketelhut, D.J. (2008, April). *Assessing scientific inquiry and content using virtual environments*. Invited panelist at the Chemical Heritage Foundation's 8th Annual Leadership Initiative in Science Education, Philadelphia.

Ketelhut, D. J. (2007, October 31). *Alternative Assessments of Students' Understanding of Inquiry via a Multi-User Virtual Environment.* Invited presentation at the Research Seminar of the University of Aberdeen, Scotland.

Ketelhut, D. J. & Newton, K. J. (2007, October 19). *Getting Grounded:An Inquiry-Based Course in a Combined Mathematics and Science Education Doctoral Program.* Invited presentation for the STEM Education Research Group at the University of Pennsylvania.

Ketelhut, D. J. & Dede, Chris. (2007, June 12*). Alternative Assessments of Students' Understanding of Scientific Inquiry via a Multi-User Virtual Environment.* Invited paper presented at the Distributed Learning and Collaboration (DLAC-II) Symposium, Singapore.

Ketelhut, D. J. (2007, April 17). *Using Games and Simulations in Education.* Invited panelist at the Chemical Heritage Foundation's 7th Annual Leadership Initiative in Science Education, Philadelphia.

Ketelhut, D.J. (2007, March 9*). Investigating Scientific Inquiry Behavior Patterns using a Multi-User Virtual Environment.* Invited presentation at National Institutes of Education, Singapore.

Ketelhut, D. J. (2004, April). *Spreading your wings--putting it all together.* Panelist on "Surviving Graduate School," at the American Education Research Association, San Diego.

Invited Workshops:

Ketelhut, D.J., Nelson, B., and Schifter, C. (2010, May 3). Workshop: Educational Research in the Virtual World. Invited workshop co-presenter at the Applied Research in Virtual Environments for Learning SIG at AERA. Denver, Co.

Ketelhut, D.J. (2006, August 1). *Developing Curricula for Online Education*. Workshop presented at

the K-12 Online Teaching Symposium, Madison.

Media Interviews:

Ketelhut, D. J. (2006). Interviewed by *The Newshour with Jim Lehrer* on the "School of the Future."

PEER-REVIEWED CONFERENCE PRESENTATIONS (students and post-doctoral fellows in red)

Ketelhut, D.J., Hestness, E., Mills, K. Ylizarde, N.H., McGinnis, J.R., Plane, J., & Cabrera, L. (2018, April 17). *Mentor teachers' views on integrating computational thinking into elementary science following a professional development experience*. Paper presented at the annual meeting of the American Educational Research Association (AERA). New York, NY, April 13-17, 2018.

Hestness, E., **Ketelhut, D,J.**, McGinnis, J.R., Plane, J., Razler, B., & Mills, K. (2018, March 30). *Computational thinking professional development for elementary science educators: Examining the design process*. Paper presented at the Society for Information Technology and Teacher Education (SITE) annual conference, Washington, DC, March 26-30, 2018.

McGinnis, J.R., **Ketelhut, D.J.**, Hestness, E., Jeong, H., and Cabrera, L.. (2018, March 11). *Programmatic model building in undergraduate elementary science teacher education for computational thinking*. A poster presented at the annual meeting of NARST: A Worldwide Organization For Improving Science Teaching and Learning Through Research. Atlanta, GA, March 10-13, 2018

Ketelhut, D.J., and Nelson, B. (2017, April 29). *Blending Formal and Informal Learning Environments: The Case of SAVE Science.* Paper presented at the annual meeting of the AERA conference, San Antonio, Tx.

Gong, X., Mill, K., Bergey, B., **Ketelhut, D.J.**, and Coon, A. (2016, April 8). *How Prior Knowledge and Self-Efficacy Influence Multiple Indicators of Student Performance in Virtual Environments.* Paper presented at the annual meeting of the AERA conference, Washington DC.

Mills, K., **Ketelhut, D. J.,** Coon, A., and Natarajan, U. (2016, April). *Exploring How Students Construct Scientific Explanations After Implementation of an Immersive Virtual Environment*. Paper presented at the annual meeting of the AERA conference, Washington DC.

Coon, A., Mills, K, Ketelhut, D.J., Gong, X., and Nelson, B. (2016, April). *Validating an Immersive Virtual Environment–Based Assessment in Diverse Student Populations Using Traditional Measures of Performance*. Poster presented at the annual meeting of the AERA conference, Washington DC. ***BEST ARIEL SIG EMERGING VIRTUAL SCHOLAR AWARD***

Mills, K., **Ketelhut, D. J.,** Natarajan, U. (2015, June). Exploring How Students Construct Scientific Explanations During a Classroom Discussion after Implementation of an Immersive Virtual Environment. Computer Supported Collaborative Learning. Gothenburg, Sweden.

Mills, K., Coon, A., Natarajan, U., **Ketelhut, D. J.,** Gong, X., Nelson, B. (2015, April). IVE-based Science Assessment: Multiple-Choice versus Free Response Student Performance in Diverse School Environments. National Association of Research in Science Teaching. Chicago, IL.

Coon, A., **Ketelhut, D.J.**, Mills, K., Natarajan, U., Gong, X., Nelson, B.C. (2015, April 17). *Performance, Self-Efficacy, and Socioeconomic Status: The Implementation of an Immersive Virtual Environment-Based Science Assessment in Diverse School Environments*. Presented at AERA 2015, Chicago, IL.

Gong, X., Bergey, B., **Ketelhut, D.J.**, Mills, K., & Coon, A. (2015, April 12). *The Impact of Prior Knowledge and Self-efficacy on Students' Performance In the Virtual Environment.* Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST), Chicago.

Ketelhut, D.J. (2015, February 14). *Discovering what students know through data mining their problem-solving actions within the immersive virtual environment, SAVE Science*. Presented at AAAS Meeting, San Jose, Ca.

Nelson, B., **Ketelhut, D.J.**, Schifter, C., Sil, A., Slack, K., and Kim, Y. (2014, November 6*). Featured Research - Basketball Trouble: A Game-Based Assessment of Science Inquiry and Content Knowledge*. Paper presented at the Association for Educational Communications and Technology Annual Meeting, Jacksonville, Florida. ***Paper chosen as a featured research presentation***

Ketelhut, D.J., Nelson, B., Bergey, B., and Ryu, M. (2014, October 9). *Basketball Trouble: Design and Gender in Immersive Learning Environments*. Paper presented at the European Conference on Game-based Learning annual meeting, Berlin, Germany.

Bergey, B., **Ketelhut, D**., Liang, S., Natarajan, U., & Karakus, M. (2014). *Scientific inquiry self-efficacy and computer game self-efficacy as predictors and outcomes of middle school boys' and girls' performance in a science assessment in a virtual environment*. Paper presented at the annual meeting of the AERA conference, Philadelphia, Pa. ***BEST DIVISION C GRADUATE STUDENT PAPER AWARD***

Ryu, M., Gong, X., and **Ketelhut, D.J**. (2014). An Analysis of Gender Differences in a Virtual Environment-Based Science Assessment. Paper presented at the annual meeting of the NARST Conference, Pittsburgh, Pa.

Ketelhut, D.J., Nelson, B., Sil, A., & Yates, A. (2013). *Discovering what students know through data mining their problem-solving actions within the immersive virtual environment, SAVE Science*. Presentation at the annual meeting of the American Educational Research Association. San Francisco, April 27, 2013.

Shelton, A. Natarajan, U., & **Ketelhut, D. J**. (2013). Modeling Inquiry Activities for Middle School Science Classroom. Presentation at the annual meeting of the National Science Teachers Association. San Antonio, TX, April 14, 2013.

Shelton, A. **& Ketelhut, D. J.** (2013). NARST Session: Reaching More Students by Providing Visual Contextualization During Assessments. Presentation at the annual meeting of the National Science Teachers Association. San Antonio, TX, April 12, 2013.

Ketelhut, D.J., Natarajan, U., & Shelton, A. (2013, April 8). Using data from virtual environment-based assessments to scaffold student demonstration of learning and teacher practice change. Presentation at the annual meeting of the National Association of Research in Science Teaching Association. Puerto Rico, April 8.

Shelton, A., Natarajan, U., **Ketelhut, D. J.,** Felix, D., & Teufel, C. (2013). Evaluating student understanding in virtual environment-based science assessments: Comparative measure for content knowledge and inquiry. Presentation at the annual meeting of the National Association of Research in Science Teaching Association. Puerto Rico, April 6.

Ketelhut, D.J. (2012, November 27). Using Immersive Virtual Environments to Promote Creative Scientific Problem-solving: the SAVE Science Project. Presentation at the European Chapter Annual Meeting of the Immersive Education Summit. Paris, France November 27, 2012.

Ketelhut, D.J. and Shelton, A. (2012, October 4). Using Immersive Virtual Environments to Assess Science Understanding: The Impact of Contextualization. Paper presented at the European Conference on Game-based Learning annual meeting, Cork, Ireland.

Natarajan, U., Kirchgessner, M. and **Ketelhut, D.J.** (2012, October 5). A Design Strategy for Scaling up Implementations in Virtual Environments. Poster presented at the European Conference on Game-based Learning annual meeting, Cork, Ireland.

Ketelhut, D.J., Nelson, B., Yates, A.and Sil, A. (2012, October 5). Insights Into Student Learning Using Virtual Environments as Assessments; Datamining SAVE Science. Poster presented at the European Conference on Game-based Learning annual meeting, Cork, Ireland. ***BEST POSTER AWARD***

Sil, A., Shelton, A., **Ketelhut, D.J**., & Yates, A. *Automatic Grading of Scientific Inquiry*. Paper presented at the 7th Workshop on Innovative Use of NLP for Building Educational Applications of the North American chapter of the Association for Computational Linguistics, Montreal. June 7, 2012.

Ketelhut, D.J., Nelson, B., Sil, A., Yates, A., Shelton, A., & Schifter, C. (2012, April). Applying Educational Data Mining in E-Learning Environments: the SAVE Science project. Poster presented in a structured poster session at the annual meeting of the American Educational Research Association, Vancouver. April 15, 2012.

Teufel, C., Natarajan,U., **Ketelhut, D.J**., Shelton, A., Kirchgessner, M., & Schifter, C.C. (2012, March). *Designing professional development for scientific* inquiry. Paper to be presented at the annual meeting of the National Science Teacher's Association (NSTA) Conference, Indianapolis, IN. March 31, 2012.

Shelton, A. & **Ketelhut, D. J**. (2012, March). Comparing Student Performances, Anxieties, and *Preferences between Situated, Virtual Environment Assessments and Multiple-Choice Assessments.* Paper to be presented at the annual meeting of the National Association for Research in Science Teaching (NARST), Indianapolis, IN, March 25-28.

Natarajan, U., Shelton, A., Kane, T.L., Willard, G., **Ketelhut, D.J**., & Schifter, C.C. (2012). *Scaffolding for Scientific Inquiry.* Paper presented at the Society for Information Technology & Teacher Education Conference, March 8, Austin, TX.

Shelton, A., Natarajan, U., **Ketelhut, D. J**., Nelson, B.C., & Schifter, C. C. (2012, February). *Digital Tracking Ethnography of Virtual Test Takers*. Paper to be presented at the Annual Ethnography in Education Research Forum, February 24-25, 2012.

Majerich, D., Schifter, C., Shelton, A., and **Ketelhut, D.J**. (2011, April 9). *Effects of Reading-While-Listening Affordance on Students' Hypotheses Developed in an Inquiry-Based Virtual Environment Assessment*. Paper presented at the American Educational Research Association annual meeting. New Orleans. ***BEST PAPER AWARD for ARVEL SIG***

Ketelhut, D.J. and Newton, K. J. (2011, April 12). *The Development of Mathematics and Science Teacher Efficacy During an Alternative Middle Grades Certification Program*. Paper presented in a roundtable at American Educational Research Association annual meeting. New Orleans.

Schifter, C.C., **Ketelhut, D.J**., and Nelson, B.C. (2011, March 9). *Middle school children participation in an immersive virtual game environment, presence, and Piaget's stages of development*. Presented at the 22nd International Conference Society for Information Technology & Teacher Education, March 9, 2011, Nashville, TN.

Newton, K.J., Jubilee, S., and **Ketelhut, D.J**. (2010, July). Mathematics Teacher Efficacy during a Field-based, Alternative Certification Program. Paper presented at the Association of Teacher Educators Annual Summer Conference. Kansas City.

Majerich, D, **Ketelhut, D.J.,** Schifter, C., Nelson, B., and Kim, Y. (2010, July 1). *Reviving Dewey's "Reflective Thinking" Framework for the Design of Problems in Virtual Learning Environment-based Assessments of Content and Inquiry*. Poster presented at the International Conference on Learning Sciences. Chicago.

Ketelhut, D.J. (2010, June). *How to design immersive virtual worlds to assess understanding of science content and process.* Poster presented for the Game, Learning and Society Conference. Madison, WI.

Nelson, B, **Ketelhut, D.J.**, Schifter, C., Mudegowder, D., Freeman, Z., Kim, Y. (2010, May 2). *Improving Science Assessments by Situating Them in a Virtual Environment: The SAVE Science Project*. Paper presented at the American Educational Research Association annual meeting. Denver, Co.

Ketelhut, D.J. (2010, April). *Assessing science understanding with immersive virtual worlds*. Paper presented at the Immersive Education Conference. Chestnut Hill, Ma.

Schifter, C., **Ketelhut, D.J.**, and Nelson, B. (2010, April 1). *Presence theory and virtual games: a case of save science.* Paper presented at the Society for Informational Technology and Teacher Education. San Diego.

Ketelhut, D.J. (2010, April 1). *Assessing Gaming, Computer and Scientific Inquiry Self-efficacy in a*

Virtual Environment. Paper presented within a symposium at the Society for Informational Technology and Teacher Education. San Diego.

Ketelhut, D.J., Clark, D., Nelson, B., Schifter, C., D'Angelo, C.M., Kane, T., Menekse, M., Shelton, A., Slack, K., and Snyder, M. (2010, March 24). *Electrons, Photons & Neurons: Harnessing Virtual Worlds to Redesign Science Assessment*. Symposium organized at the National Association for Research in Science Teaching, Philadelphia.

Savage, Lorraine, **Ketelhut, D.J.,** Varnum, S., and Stull, J. (2010, March 22). *Raising Interest in Science Careers through Informal After-School Experiences*. Paper presented at the National Association for Research in Science Teaching, Philadelphia.

McCormack, P., **Ketelhut, D.J.,** Nelson, B., and Schifter, C. (2010, March 19). *SAVE Science: Learning what students really know about science using virtual environments*. Paper presented at the National Science Teachers Association annual meeting, Philadelphia.

Ketelhut, D.J., Nelson, B., and Schifter, C. (2010, February 21). *Learning What They Really Know About Science: The Case of SAVE Science*. Worlds of Wonder: Can Video Games Teach Science symposium participant at the American Association for the Advancement of Science annual meeting, San Diego.

Schifter, C., **Ketelhut, D.J**., and Nelson, B. (2009, November 20-22). *Save Science: presence theory and virtual games*. Paper presented at the International Conference on Cognition and Exploratory Learning in the Digital Age, Rome.

Ketelhut, D.J., Nelson, B., and Schifter, C. (2009, November 20-22). *Virtual environments for situated science assessment.* Reflection paper presented at the International Conference on Cognition and Exploratory Learning in the Digital Age, Rome.

Nelson, B., **Ketelhut, D.J**., & Schifter, C. (2009, July). *Embedded Assessments of Science Learning in* ***Immersive Educational Games: the SAVE Science Project. Paper presented at the International*** Conference on Artificial Intelligence in Education (AIED). Brighton, England.

Bowman, C., and **Ketelhut, D.J.** (2009, April 18-21). *Measured and Perceived Cognitive and Motivational Effects of a Virtual Scientist Mentor.* Paper presented at the National Association for Research in Science Teaching, Orange County.

Ketelhut, D.J. (2009, April 13-17). *Developing Technological Pedagogical Content Knowledge: Developing a model of the impact of experience and science expertise.* Paper presented within a Symposium entitled "Bridging New Literacies and Technological Pedagogical Content Knowledge (TPCK): Theoretical and Research Perspectives" at the American Educational Research Association, San Diego.

Ketelhut, D.J., Nelson, B., and Schifter, C. (2009, April 13-17). *Situated Assessment using Virtual Environments of Science Content and Inquiry.* Poster presented within an interactive Symposium entitled "Peering behind the digital curtain: Using situated data for assessment in collaborative virtual environments and games" at the American Educational Research Association, San Diego.

Nelson, B., **Ketelhut, D.J**., and Schifter, C. (2009, April 13-17). *Situated Assessment Using Virtual Environments for Science Content and Inquiry (SAVE Science): Exploring Cognitive Load in Immersive Educational Games*. Discussion paper presented at the American Educational Research Association, San Diego.

Ketelhut, D.J., Schifter, C., Varnum, S., & Stull, J. (2009, March 1-5). Introducing Interactive Whiteboards to Urban Teachers. Paper presented at the Society for Informational Technology and Teacher Education, Charleston.

Ketelhut, D.J., Schifter, C., & Nelson, B. (2009, March 1-5). SAVE Science: Situated assessment using virtual environments for science content and inquiry. Poster presented at the Society for Informational Technology and Teacher Education, Charleston.

Schifter, C. & **Ketelhut, D.J.** (2009, March 1-5). Teacher Acceptance of Game-Based Learning in K-12: The Case of River City. Paper presented at the Society for Informational Technology and Teacher

Education, Charleston.

Ketelhut, D.J., Clarke, J., Nelson, B., & Dukas, G. (2008, June). *Rethinking Pedagogy: Using Multi-User Virtual Environments to Foster Authentic Science Learning*. Paper presented at the International Conference of Learning Sciences, Utrecht.

Clarke, J., Dede, C., Dieterle, E., **Ketelhut, D.J**., & Nelson, B. (2008, March 24-28). *How Attaining Special "Powers" Affects Student Engagement and Learning in an Immersive, Collaborative Simulation*. Paper presented as part of a symposium at the American Educational Research Association, New York City.

The River City Research Team (includes **Ketelhut**). (2008, March 24-28). *Formative Assessments Integrated into a MUVE that Provides Real-Time Feedback for Teachers on Student Learning.* Paper discussion at the American Educational Research Association, New York City.

Ketelhut, D. J. (2008, March 24-28). *Comparison of Different Methods of Assessment of Students' Understanding of Scientific Inquiry via a Multi-User Virtual Environment.* Paper discussion at American Educational Research Association, New York City.

Ketelhut, D. J. and *DiLeo, J*. (2008, March 24-28). *Doing Science in School: a Pilot Study of Urban and Suburban Students' Perceptions of School Science as Shown by their Drawings.* Paper presented at American Educational Research Association, New York City.

Ketelhut, D.J., Clarke, J, Dede, C., and Nelson, B. (2008, March 28-30). *Real World Scientific Inquiry in Virtual Environments.* Paper presented at the National Science Teachers Association, Boston.

Ketelhut, D.J., Varnum, S., Stull, J., and DiPaolo, J. (2008, March 28-30). *Urban Ecology: Connecting science to students' lives.* Paper presentation at the National Science Teachers Association, Boston.

Ketelhut, D. J. (2008, March 30-April 2). *The Impact of Student Self-Efficacy on Scientific Inquiry Skills***.** Paper presentation at the National Association for Research in Science Teaching, Baltimore.

Smythe, A., Stull, J., **Ketelhut, D.J.,** & Varnum, S. (2008, February 21-24). *Differences in Students' Attitudes Toward Learning Science in School and Attitudes toward Science as a Career.* Paper presented at the Easter Sociological Society Annual Meeting, New York City.

Smythe, A., Stull, J., Varnum, S., & **Ketelhut, D.J**.. (2008, February 21-24). *Effective Teaching Practices and Achievement: Where Teachers and Students Agree.* Paper presented at the Eastern Sociological Society Annual Meeting, New York City.

Nelson, B., and **Ketelhut, D.J**. (2007, October). *Self-efficacy in Science and Use of Embedded Guidance in Educaitonal Multi-User Virtual Environments.* Paper presented at Association for Educational Communications and Technology, Anaheim.

Schifter, C. & **Ketelhut, D.J**. (2007, October 24-26). *Teacher Acceptance of Game-Based Learning in K-12: The Case of River City*. Paper presented at the European Games-Based Learning Conference, Paisley, Scotland.

Nelson, B., and **Ketelhut, D. J.** (2007, July 16-21). *Exploring Embedded Guidance and Self-efficacy in Educational Multi-user Virtual Environments.* Poster presented at the Computer Supported Collaborative Learning Conference, New Brunswick.

Ketelhut, D. J. (2007, April 10-14). *Investigating Students' Scientific Inquiry Behaviors in a Multi-User Virtual Environment Using Longitudinal Data Analytical Techniques.* Paper presented at the American Educational Research Association, Chicago.

Whitehouse, P., **Ketelhut, D. J.,** Dede, C., Breit, L., and McCloskey, E. (2007, April 10-14). *Online Teacher Professional Development: Emerging Models and Methods.* Paper presented at the American Educational Research Association, Chicago.

Nelson, B., **Ketelhut, D. J**., Clarke, J., Dieterle, E., Dede, C., and Erlandson, B. (2007, April 10-14). *Robust Design Strategies for Scaling Educational Innovations: The River City MUVE Case Study.* Paper presented at the American Educational Research Association, Chicago.

Clarke, J., **Ketelhut, D. J.,** Nelson, B., Erlandson, B., Dieterle, E., and Dede, C. (2007, April 10-14).

Investigating Students' Behaviors, Patterns, and Learning in a Multi-User Virtual Environment Designed Around Inquiry. Paper presented at the American Educational Research Association, Chicago.

Nelson, B., **Ketelhut, D. J.,** Clarke, J., Dede, C. (2006, October 11-14). *Designing for Real-World Inquiry in Virtual Environments* . Paper presented at Association for Educational Communications and Technology, Dallas.

Ketelhut, D. J., Clarke, J., Dede, C., Nelson, B. (2006, October 11-14). *Studying Near and Far Transfer in a Multi-User Virtual Environment*. Paper presented at Association for Educational Communications and Technology, Dallas.

Ketelhut, D. J., Dede, C., Clarke, J., & Nelson, B. (2006, April 7-11). *A Multi-User Virtual Environment for Building Higher Order Inquiry Skills in Science.* Symposium Paper presented at the American Educational Research Association, San Francisco.

Ketelhut, D. J. (2006, April 7-11). *Assessing Scientific and Technological Self-efficacy: A Measurement Pilot.* Poster presented at the American Educational Research Association, San Francisco.

Ketelhut, D. J., & Dede, C. (2006, April 3-6). *Assessing Inquiry Learning.* Paper presented at the National Association for Research in Science Teaching, San Francisco.

Ketelhut, D. J., Nelson, B., Dede, C., & Clarke, J. (2006, April 3-6). *Inquiry Learning in Multi-User Virtual Environments.* Roundtable Paper presented at the National Association for Research in Science Teaching, San Francisco.

Dede, C., **Ketelhut, D. J.,** Clarke, J., Nelson, B., & Bowman, C. (2005, April 11-15).*Students' Motivation and Learning of Science in a Multi-User Virtual Environment.* Paper presented at the American Education Research Association, Montreal.

Dede, C., Clarke, J., **Ketelhut, D. J.,** Nelson, B., & Bowman, C. (2005, April 11-15). *Fostering Motivation, Learning, and Transfer in Multi-User Virtual Environments.* Paper presented at the American Education Research Association, Montreal.

Ketelhut, D. J. (2005, April 4-8). *Assessing Scientific and Technological Self-efficacy: A Measurement Pilot*. Paper presented at the National Association for Research in Science Teaching, Dallas.

Ketelhut, D. J., Clarke, J., Dede, C., Nelson, B., & Bowman, C. (2005, April 4-8). *Inquiry Teaching for Depth and Coverage via Multi-User Virtual Environments.* Paper presented at the National Association for Research in Science Teaching, Dallas.

Dede, C., **Ketelhut, D. J.,** & Nelson, B. (2004, April). *Design-Based Research on Gender, Class, Race, and Ethnicity in a Multi-User Virtual Environment.* Paper presented at the American Education Research Association, San Diego.

Ketelhut, D.J. (2005, April 4-8). *The Relationship between Theory and the Practice of Teaching.* Co-designer and chair of Panel discussion at the American Educational Research Association, San Diego.

Dede, C., Nelson, B., **Ketelhut, D. J.,** Clarke, J., & Bowman, C. (2004, July). *Design-based Research Strategies for Studying Situated Learning in a Multi-User Virtual Environment.* Paper presented at the International Conference of the learning Sciences, Los Angeles. 2003

Dede, C., & **Ketelhut, D**. (2003, April). *Designing for Motivation and Usability in a Museum-based Multi-User Virtual Environment.* Paper presented at the American Education Research Association, Chicago, Illinois.

Dede, C., **Ketelhut, D.J.,** & Ruess, K. (2002). *Motivation, Usability, and Learning Outcomes in a Prototype Museum-based Multi-User Virtual Environment.* Poster presented at the International Conference of the Learning Sciences, Seattle.

CERTIFICATIONS

Massachusetts High School Teaching Certification in Biology, Chemistry, General Science

Virginia Collegiate Professional Certificate in Biology
Illinois Teaching Certificate for grades 6-12
North Carolina Science Teaching Certificate for grades 7-12

CREATIVE WORKS

SAVE Science assessment Virtual Environment, co-designer, 2008-2015.
--approximately 3000 students participated
Integrated scientific inquiry and technology summer camp curriculum, 2008
--approximately 50 students participated
Self-efficacy in Science and Technology (SETS) Survey, 2004**.**
--69 requests for this instrument have been received to date
River City, a Multi-user Virtual Environment, co-designer, 2001-2008**.**
--used with over 10,000 students world-wide

COURSES, CURRICULA AND PROGRAMS DEVELOPED

Programmatic design:

Integrated Technology in Education Post-Bac Certificate, 2017-present. Co-designer.
University of Maryland College Park Technology, Learning and Leadership Doctoral Program Specialization, 2012-present. Specialization co-designer.
Daegu Korean Teacher Institute, 2013. Co-Director.
Temple University Math/Science Education Doctoral Program, 2006-2011. Program co-designer.
Usable Knowledge Conference on Online Teacher Professional Development, 2005. Member Design Team.

Courses completely redesigned:

- EDCI770, Foundations of Science Education: Research and Theory, 2014
- Knowledge, Reasoning, and Learning in Science, 2011
- Teaching Science in the Elementary Grades, 2011
- Introduction to math and science education research, 2010
- Current Practices in Mathematics and Science Education; 2008
- Critical Issues in Mathematics and Science Education; 2007
- Elementary Science Education, N-6; 2006

Courses developed:

- TLL Graduate Seminar on Tech How technology impacts the lives of individuals and the systems in which we learn, 2017
- TLL Proseminar 2, Research and Technology; 2015
- Topics in Science education: the impact of technology on education, 2011
- Early Childhood methods for teaching science, 2009
- Topics in Science Education: Exploring the teaching of Inquiry; 2006
- General Biology, 2005

Courses co-developed:

- TLL Proseminar I: Theories of Learning and Leadership with Technology (2014)
- Teaching science in middle grades II, 2009
- Teaching Mathematics in middle grades I, 2008
- Teaching Science in middle grades I, 2008
- Introduction to middle school, 2008

HONORS & AWARDS

11th Annual University-Wide Celebration of Scholarship and Research, honoree, 2018
Best Emerging Virtual Scholar Award, AERA ARIEL SIG, 2016, co-authored/mentored GA to this win
2nd Best Game overall (Weather Trouble Module), ECGBL game design competition, 2015
Best App-based Game (Weather Trouble Module), ECGBL game design competition, 2015
Best Graduate Student Paper, AERA 2015, co-authored/mentored GA to this win
Featured Research Paper Presentation, AECT, 2014, co-author
Finalist in game design competition (SAVE Science Basketball Module), ECGBL, 2013
Best Poster Award, ECGBL, 2012
Best Teacher of Graduate Students Award, College of Education, Temple University, 2011
Best Paper Award, AERA ARVEL SIG, 2011, co-author
AERA Division C, Certificate of Appreciation, 2003, 2010
CSCL Early Career Workshop, 2007.
AERA Council, 2006, Certificate of appreciation.
Harvard Graduate School of Education Student Government, 2003, Certificate of appreciation

SERVICE

Consultants/Advisory Boards

NSF STEM+C: ***Learning Physics in a Synergistic Scaffolded Programming Environment***, Dr. Midori Kitagawa, University of Texas at Dallas, 2017-present. External Evaluator.

NSF STEM+C: ENGAGE: ***Immersive Game-Based Learning for Middle Grade Computational Fluency*****,** Dr. James Lester, North Carolina State University, 2016-present. Advisory Board Member.

NSF NRT: ***Mixed Reality Integrated Teaching Training*****,** Dr. Fengfeng Ke, Florida State University, 2016-present. Advisory Board member.

IES: ***Mission Hydrosci*****,** Dr. Troy Sadler, University of Missouri. 2015-present. Advisory Board member.

NSF CAREER: ***Projective reflection: Learning as identity exploration within games for science***, Dr. Aroutis Foster, Drexel University. 2014-present. Advisory Board member

NSF DRK12: ***Inquiry Primed: An Intervention to Mitigate the Effects of Stereotype Threat in Science,*** 2013-16. Consultant to CAST organization, Wakefield, Ma.

GATES Foundation: ***Using Learning Games to Support College Readiness, a Summary of selected findings from the Next Generation Learning Challenges Wave 2*****,** 2013. Consultant.

e-Fund-Act 183 State of Pennsylvania Grant, 2012-13. Advisor and consultant.

Blue Mars Science Center National Science Foundation Grant, 2009-10. Advisor and Consultant TERC, Boston, Massachusetts.

Singapore: ***Virtual Worlds and Intelligent Agents for Learning Science: Innovative Technology and Pedagogy for Singaporean Schools*****.** PI: Dr. Michael Jacobson, National Technological University. 2006-07.

Editorships

Information Sciences Special Issue on Serious Games, volume 264, 2014, co-editor.

Editorial boards

Contemporary Educational Psychology, 2009-present. Editorial board.
Journal of Information and Learning Sciences, 2016-present. Editorial Advisory board.

Manuscript/proposal Reviewer

Computers and Education, 2011-present. Manuscript reviewer
Science Education, 2007-present. Manuscript reviewer.

Contemporary Educational Psychology, 2007-present. Manuscript reviewer.
Journal of Science Education and Technology, 2007-present. Manuscript reviewer.
International Journal of Science Education. 2013. Manuscript reviewer.
Information Sciences. 2013. Manuscript reviewer.
Icelandic Research Fund. 2013. Proposal Reviewer.
Journal of Online Learning and Teaching. 2012-2013. Manuscript reviewer.
Journal of Research in Science Teaching, 2007-2012. Manuscript reviewer.
ICLS, 2006-2011. Proposal reviewer.
ECGBL, 2013-present. Proposal reviewer.
NARST, 2005-present. Proposal reviewer.
AERA, 2004-present. Proposal reviewer.

National and International

NARST Website Standing Committee, 2016-present. Member
European Conference on Game-based learning, 2013-present. Program Committee.
NARST Technology Strand co-Chair, 2015-2017.
NSF Panel reviewer, 2010-present; 1-3 times/year
NARST Website Design ad hoc Committee member, 2015-16.
Immersive Education Initiative
Board of Governors, 2013-2016.
Mid-Atlantic Regional Chapter Chair, 2013.
AERA
Division C
2015-2016. Division C Science Education Section Program Chair.
2013-2014. Division C Science Education Section Program Chair.
2013. New Faculty Mentoring Program Mentor
2012. Graduate Student Seminar: Mentor and Panelist
2009-2010. Division C Science Education Section Program co-Chair
Applied Research on Virtual Environments for Learning SIG
2008-2010. Secretary/Treasurer
2007-present**.** Charter Member
Graduate Student Council
2006-2007. Past Chair; election subcommittee Chair.
2005-2006. Chair
2004-2005. Chair-elect
2002-2004. Division C representative
NARST Dissertation Award Committee, 2011-2014
DRK12 Resource Network (CADRE) Gaming SIG Chair, 2010-2014
DRK12 Resource Network (CADRE) New assessment methods SIG member, 2009-2012
ICCE Conference on Emerging Research in Technology Enhanced Learning, 2008. Program Committee

Regional

Maryland State Department of Education STEM task force, 2013-14, member.
Washington County School District Virtual High School Advisory Board, 2012-2013, member.
Philadelphia Professional Development Institute, 2008-2011. Charter and organizing committee member.
Girls Exploring Tomorrow's Technology of Philadelphia, 2007. Organizing committee member and Member of logistical subgroup.
Pennsylvania Regional STEM group, 2007. Small group moderator.

Philadelphia Coalition for Math and Science Education, 2006-2011. Member of Working Group 4 on professional development.

University

University of Maryland

2015-present: University Senator

University of Maryland, College of Education

2012-2015: Educator Preparation Committee, member
2013-2014: Educator Preparation Committee, chair
2011-2013: Technology Advisory Committee, member
2011-2013: Fulbright Distinguished Teacher supervisor

University of Maryland, Teaching and Learning, Policy and Leadership department

2017, Spring: Appointments, Promotion and Tenure Committee: member
2016-17: Technology, Learning and Leadership Faculty Search Committee: chair
2016: External Review Action Advisory Committee: member
2015-present: Graduate Research Education Committee: member
2014-present: Technology, Learning and Leadership Doctoral program admissions committee: coordinator
2013-2015: Website Committee: member
2012-2015: Leadership council, TLPL department
2012-present: Assistant Professor Mentor
2012-2015: Secondary Education Coordinator
2012-2015: TLREC member
2013-14: Task force for Division 1 comprehensive exam redesign, member
2013-14: New Doctoral program core course design committee, member
2013-14: Appointments, Promotion and Tenure Committee: member
2012: Co-chair Task Force on Masters program

Temple University

2010: Member of the Temple Institute for the Learning and Education Sciences group.
2010: Member of the Temple University Games Interest Group
2008-2009: Member of the Early College High School design team; science curriculum subgroup member.
2008: Member of the College of Science and Technology's Bernard Harris Summer Science Camp design team.
2008: Part of interview team for honors program applicants for the Marshall.

Temple College of Education, CITE Department

2011: Lead professor, Science Education
2011: Continuing Education committee: member
2011: Member of the CITE department Math Ed Search Committee
2011: Member of the CITE department Science Ed Search Committee
2010-2011: Member of the committee on a college-wide PhD
2009. Member of the CITE department Chair Search Committee.
2008: Member of the strategic planning subcommittee on curriculum alignment.
2008: Member of middle school program design team.
2008: Member of departmental vision statement design committee.
2007-2010. Area Coordinator, Science Education Program.
2007-2011. Program Coordinator, Science Education Doctoral Program.
2007: Member of team to explore exchange possibilities with U. of Aberdeen
2007: CoE representative to the TUJapan graduation and future plans meetings .

2007: Member of the Ed Psych Faculty Search Committee
2006-2007. Member of Master of Science in Education review committee.
2006-2007. Member of Science and Math doctoral program design committee.
2006-2007. Member of the CITE department Chair Search Committee.
2006-2007. Member of secondary education committee.

Harvard University

2004. Student Research Conference training committee member.
2003-2004. Admissions Committee, Doctoral and Masters.
2002-2004. Doctoral Student Conversation Series. Co-founder.
2002-2003. Co-facilitator of orientation for incoming doctoral students
2001-2004, Doctoral Student Association. Chair.
2001-2003. Advisory Council to Chair of Learning & Teaching Area. Member.
2001-2002. Curriculum Committee for Learning & Teaching Area. Student member.
2001-2002. Harvard Health Caucus. Co-chair of outreach and communication.
2000-2001. HGSE Partnership Committee. Member.

PROFESSIONAL ORGANIZATION MEMBERSHIPS

American Educational Research Association,
Division C
SIGs—Applied Research in Immersive Environments for Learning, Learning Sciences, Science Teaching and Learning, TACTL, Technology, Instruction, Cognition & Learning

Immersive Education Consortium
International Society of the Learning Sciences
National Association for Research in Science Teaching
National Science Teachers Association