Brian C Nelson

Professor
Program Coordinator, MA in Education
Mary Lou Fulton Teachers College
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Education

Harvard University
Ed.D., focusing on educational technology, comparative learning theory, collaborative learning environments, and theory-based design. June 2005.
- *Dissertation Title:* Investigating the Impact of Individualized, Reflective Guidance on Student Learning in an Educational Multi-User Virtual Environment
- *Advisor:* Dr. Chris Dede

St. Michael's College, Colchester, Vermont
Master of Arts in Teaching English as a Second Language, focusing on design and theory of Computer Assisted Language Learning. December 1994.
- *Thesis Project:* Development of Computer-based Courseware for TOEFL Preparation
- *Advisor:* Dr. Kathy Mahnke

Washington State University (Summa cum laude)
B.A. in Communications, double major in Theater Arts. December 1990.

Professional Positions

Chair, Learning, Literacies, and Technologies PhD Program: Division of Educational Leadership and Innovation: Mary Lou Fulton Teachers College. Arizona State University, 2018-2021.

Associate Director: Division of Educational Leadership and Innovation: Mary Lou Fulton Teachers College. Arizona State University, 2019-2020.

Professor: Learning, Literacies, and Technologies: Mary Lou Fulton Teachers College
Arizona State University, August 2017-present.

Teach graduate and undergraduate courses in the Mary Lou Fulton Teachers College on theory-based design of immersive learning and assessment environments, cognitive and socio-constructivist learning theory, and educational software development. Conduct interdisciplinary research related to the design, development, and assessment of immersive environments to foster more equitable learning opportunities for K12 and university students.

Associate Professor: Educational Technology, Mary Lou Fulton Teachers College and Fulton Schools of Engineering, Arizona State University, May 2010-July 2017.

Taught graduate and undergraduate courses in both the Mary Lou Fulton Teachers College and School of

Computing, Informatics, and Decision Systems Engineering.

Assistant Professor: Educational Technology, Mary Lou Fulton Graduate School of Education, Arizona State University, 2005-2010.

Taught graduate courses on theory-based design of immersive learning environments, cognitive and socio-constructivist learning theory, and educational software development. Conducted research related to the design, development, and assessment of learning inside complex computer-based and online environments for science, literacy, and math.

Research Assistant, Project Designer: Harvard University, River City Project. 2002-2005.

Designed River City virtual world and conducted mixed methods research on student learning in a multi-user virtual environment.

Instructor: Harvard University. 2003-2004.

Taught a graduate course on comparative learning theory and educational software design.

Teaching Fellow: Harvard University. 2000-2001.

T-502: Learning Media that Bridge Distance and Time, T-*651: Emerging Educational Technologies.* With Professor Chris Dede. Introduced cutting-edge educational tools to students, including multi-user virtual environments, intelligent tutoring systems, and virtual manipulatives.

T-522: Educational Software Development. With Professor Shari Metcalf. Taught the lab portion of the class, introducing graduate students to Macromedia Director, and helped in the development of semester software projects.

Assistant Professor of English: University of Aizu, Aizu-wakamatsu, Japan. 1997-2000.

Taught ESP (English for Specific Purposes) reading, speaking, and listening courses in Information Science-related English in the Center for Language Research. Main research interests: design of computer and web-based English software. Developed WWW-based reading and vocabulary activities, and a computer-based reading course for Japanese engineering students.

Assistant Professor of English: Kanazawa Technical College, Kanazawa, Japan. 1995-1997.

Taught English speaking, listening, reading and writing to engineering students. Taught basic skills courses as well as content and task-based courses in Computer English and internet/WWW English.

English Instructor: Chittenden County Schools, Chittenden County, VT. 1993-1995.

Taught English to recent immigrants from Vietnam and Eastern Europe at the elementary and middle school levels.

English/Multimedia Instructor: St. Michael's College, VT. Summer, 1994.

Taught an intensive, task-based ESL course to 40 Japanese students in the St. Michael's School of International Studies. Helped students to compile written stories and recorded self-introductions into a computerized presentation combining sound, still images and text in English.

English Instructor: Sumner Jr. High, Sumner, WA. November 1992-June, 1993.

Taught beginning English to recent immigrants from Mexico.

English Teacher: America Eigo Gakuin, Wakayama, Japan. May 1991-July, 1992.

Taught reading, writing, listening, and speaking skills to 200 junior high students at Chiben Gakuin, a junior high school in Wakayama City, Japan.

Research

(Current and former student co-authors shown with *)

BOOKS

Nelson, B. & *Erlandson, B. (2014). Design for Learning in Virtual Worlds. Routledge Publishers. Chinese edition.

Nelson, B. & *Erlandson, B. (2012). Design for Learning in Virtual Worlds. Routledge Publishers.

REFERRED JOURNAL PUBLICATIONS

1. *Ha, J., *Pérez Cortés, L. E.., *Su, M., **Nelson, B**., Bowman, C., & Bowman, J. (in press). The impact of a gamified mobile question-asking app on museum visitor group interactions: An ICAP framing. *International Journal of Computer Supported Collaborative Learning.*
2. Ketelhut, D.J & **Nelson, B.** (2021).Virtual Learning Environments. *Oxford Bibliographies in Education*. Ed. Anne Hynds. New York: Oxford University Press.
3. *Conley, Q., Atkinson, R., *Nguyen, F., & **Nelson, B.** (2020). MantarayAR: Leveraging augmented reality to teach probability and sampling. *Computers and Education. 153*. https://doi.org/10.1016/j.compedu.2020.103895.
4. **Nelson, B**., Bowman, C., Bowman, J., *Perez Cortes, L., *Adkins, A., *Escalante, E. & *Owen, B., *Ha, J., & *Su, M. (2020). Ask Dr. Discovery: The impact of a casual mobile game on visitor engagement with science museum content. *Educational Technology Research and Development. 68,* 345-362.
5. Bowman, C. D. D., *Adkins, A., *Owen, B. L., *Rogers, K. J., *Escalante, E., Bowman, J. D., **Nelson, B.**, & Stoltman, A. (2019). Differences in visitor characteristics and experiences on episodic free admission days. *Museum Management and Curatorship*.
6. **Nelson, B.,** Bowman, C., & Bowman, J. (2017). Designing for data with ask dr. discovery: design approaches for facilitating museum evaluation with real-time data mining. *Technology, Knowledge, and Learning. 22(3),* 427-442.
7. **Nelson, B.**, *Kim, Y., & *Slack, K. (2016). Visual signaling in a high-search virtual world-based assessment: A SAVE Science design study. *Technology, Knowledge, and Learning. 21(2),* 211-224.

8. *Lin, L., Atkinson, R. K., Savenye, W. C., & **Nelson, B.** (2016). The effects of visual cues and self-explanation prompts: Empirical evidence in a multimedia environment. *Interactive Learning Environments. 24(4),* 799-813.

9. Clark, D. B., Virk, S., Sengupta, P., Brady, C., Martinez-Garza, M., Krinks, K., Killingsworth, S., Kinnebrew, J., Biswas, G., Barnes, J., Minstrell, J., **Nelson, B., ***Slack, K., & *D'Angelo, C. (2016). SURGE's evolution deeper into formal representations: The siren's call of popular game-play mechanics. *International Journal of Designs for Learning. 7(1),* 107-146.

10. *Foshee, C. & **Nelson, B.** (2014). Avatar Personalization: Towards the Enhancement of Competence Beliefs. *International Journal of Gaming and Computer-Mediated Simulations (IJGCMS) 6(2),* 1-14.

11. **Nelson, B.,** & *Kim, Y., *Foshee, C., & *Slack, K. (2014). Visual signaling in virtual world-based assessments: The SAVE Science project. *Information Sciences 264:* 32-40.

12. Martinez-Garza, M., Clark, D. B., & **Nelson, B.,** (2013). Digital games and science learning: Research across the NRC strands of science proficiency. *Studies in Science Education 49(2),* 170-208.

13. Martinez-Garza, M. M., Clark, D., & **Nelson, B.** (2013). Advances in Assessment of Students' Intuitive Understanding of Physics through Gameplay Data. *International Journal of Gaming and Computer-Mediated Simulations (IJGCMS), 5(4):* 1-16.

14. Ketelhut, D.J., **Nelson, B.**, Schifter, C., & *Kim, Y. (2013). Improving Science Assessments by Situating Them in a Virtual Environment. *Education Sciences 3(2):* 172-192.

15. Rupp, A., Nugent, R., & **Nelson, B.** (2012). Evidence-centered design for diagnostic assessment within digital learning environments: Integrating modern psychometrics and educational data mining. *Journal of Educational Data Mining 4(1):* 1-10.

16. **Nelson, B.**, Nugent, R., & Rupp, A. (2012). On the instructional utility, statistical methodology and the added value of ECD: lessons learned from the special issue. *Journal of Educational Data Mining 4(1):* 224-230.

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

18. **Nelson, B., ***Erlandson, B., & *Denham, A. (2011). Global channels for learning and assessment in complex game environments. *British Journal of Educational Technology 42(1):* 88-100.

19. Clark, D., **Nelson, B.,** Chang, H., Martinez-Garza, *Slack, K., & *D'Angelo, C. (2011). Exploring Newtonian mechanics in a conceptually integrated digital game: Comparison of learning and affective outcomes for students in Taiwan and the United States. *Computers and Education 57(3):* 2178-2195.

20. **Nelson, B.,** Ketelhut, D.J., & Schifter, C. (2010). Exploring cognitive load in immersive educational games: The *SAVE Science project. International Journal of Gaming and Computer-Mediated Simulations, 2(1):* 31-39.

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

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

23. *Erlandson, B., **Nelson, B.,** & Savenye, W. (2010). Collaboration modality, cognitive load, and science inquiry learning in virtual inquiry environments. *Educational Technology Research and Development 58(6):* 693-710.

24. Clark, D., **Nelson, B.**, Sengupta, P., & D'Angelo, C. (2009). Rethinking science learning through digital games and simulations: genres, examples, and evidence. An NAS commissioned paper. Learning Science: Computer games, simulations, and education.

25. **Nelson, B.** & Ketelhut, D.J. (2008). Exploring embedded guidance and self-efficacy in educational multi-user virtual environments. *International Journal of Computer-Supported Collaborative Learning 3:* 413-427.

26. **Nelson, B.** & *Erlandson, B. (2008). Managing cognitive load in educational multi user virtual environments: Reflection on design practice. *Educational Technology Research and Development, 56(5-6):* 619-641.

27. **Nelson, B.** (2007). Exploring the use of individualized, reflective guidance in an educational multi-user virtual environment. *The Journal of Science Education and Technology 16(1):* 83-97.

28. **Nelson, B.** & Ketelhut, D.J. (2007). Scientific Inquiry in Educational Multi-User Virtual Environments. *Educational Psychology Review 19(3):* 265-283.

29. Clarke, J., Dede, C., Ketelhut, D.J., & **Nelson, B.** (2006). A Design-Based Research Strategy to Promote Scalability for Educational Innovations. *Educational Technology 46 (3):* 27-36.

30. **Nelson, B.**, Ketelhut, D., 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):* 21-34.

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

32. Lambacher, S., Martens, W., **Nelson, B.,** & Berman, J. (2001). Identification of English voiceless fricatives by Japanese listeners: The influence of vowel context on sensitivity and response bias. *Acoustical Science and Technology* 22 (5): 334-34.

33. Wakao, A., **Nelson, B.,** & Kurakake, T. (2000). The development of web-based English drills: teaching implications and evaluation. *Japanese College of Technology Education Journal*. 23.

34. **Nelson, B.** (1999). Using online activities to enhance ESP vocabulary Learning. *TESOL Matters,* 9 (5).

35. **Nelson, B.** (1999). Examining the fit: Moving traditional language curriculum onto the Internet. In T. Orr (Ed.), *Center for Language Research 1998 Annual Review*. 123-133. University of Aizu.

36. **Nelson, B.** (1998). Web-based vocabulary activities: pedagogy and practice. *Computer Assisted Language Learning Journal 11*: 427-435.

37. Wakao, A. & **Nelson, B.** (1997). Student-produced multimedia projects: pedagogy and practice. *The Language Teacher 12:* 19-25.

PUBLISHED REFERRED PROCEEDINGS

38. *Pérez Cortés, L. E., **Nelson, B.,** Bowman, C., Bowman, J., Owen, B., Danas, J., Escalante, E., Rogers, K., Weibel, A., & Ha, J. (2019). Deciphering Dr. Discovery: Data analytics for interpreting museum visitor demographics and engagement with exhibit content. *Proceedings of the 9th International Conference on Learning Analytics & Knowledge (LAK '19).* Tempe, AZ. 190-192.

39. **Nelson, B.,** Bowman, C., Bowman, J., & *Kim, Y. (2018). The impact of game-based design on visitor engagement with a science museum app. *Proceedings of the 12th European Conference on Games Based Learning*. France: ACI. 478-486.

40. Ketelhut, D.J. and **Nelson, B.** (2018). The role of immersive virtual environments in raising science self-efficacy. *Proceedings of the 12th European Conference on Games Based Learning*. France: ACI. 281-287.

41. Ketelhut, D.J., & **Nelson, B.** (2016). Blending Formal and Informal Learning Environments: The Case of SAVE Science. *Proceedings of the 10th European Conference on Games Based Learning*. Scotland: ACI. 314-319.

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

43. 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.

44. Cardenas, J., Theodore, N., Kalani, Y., *Barrus, A., *Christopherson, R., *Pilbeam, R., *Conley, Q, & **Nelson, B.** (2012). Brainbook: A statewide pilot for educating high school athletes about concussion. *Journal of Neurotrauma 29(10):* p. 182.

45. **Nelson, B**., *Erlandson, B., & *Denham, A. (2010). Sources of evidence for embedded assessment in immersive games. In K. Gomez, L. Lyons, & J. Radinsky (Eds.), *ICLS '10 Proceedings of the 9th International Conference of the Learning Sciences.*

46. *Erlandson, B., **Nelson, B.,** & *Denham, A. (2010). Finding essential complexity for learning in virtual worlds. In K. Gomez, L. Lyons, & J. Radinsky (Eds.), *ICLS '10 Proceedings of the 9th International Conference of the Learning Sciences.*

47. Clark, D., Nelson, B., *D'Angelo, C., *Slack, K., & Martinez, M. (2010). SURGE: intended and unintended learning in digital games. *ICLS '10 Proceedings of the 9th International Conference of the Learning Sciences.*

48. Clark, D., Nelson, B., *D'Angelo, C., *Slack, K., & Martinez, M. (2010). SURGE: integrating Vygotsky's spontaneous and instructed concepts in a digital game? *ICLS '10 Proceedings of the 9th International Conference of the Learning Sciences.*

49. 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. *ICLS '10 Proceedings of the 9th International Conference of the Learning Sciences.*

50. 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.

51. 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.

52. 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.

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

54. 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.*

55. 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. 3663-3665.

56. 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.

57. **Nelson, B.** & 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. Mahwah, NJ: Erlbaum.

58. 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. *Proceedings of ICLS 2004,* 158-165. Santa Monica, CA.

59. **Nelson, B.** (1999). A guide to moving language-learning curriculum onto the internet. *World Conference on the WWW and Internet, 1999(1)*, 810-815.

60. Berman, J., **Nelson, B**., & Lambacher, S. (1997, September). Recognition of voiceless fricatives by Japanese L2 learners. *Proceedings of the Acoustical Society of Japan*, 127-128. Sapporo, Japan.

61. Lambacher, S., Martens, W., **Nelson, B**., & Berman, J. (1997). Perception of English voiceless fricatives by native speakers of Japanese. *New Sounds 97: Proceedings of the Third International Symposium on the Acquisition of Second Language Speech.* Klagenfurt, Austria.

BOOK CHAPTERS

62. **Nelson, B**. & Kim*, Y. (2020). Multimedia Design Principles in Game-based Learning. In J. Plass, B. Homer, and R. Mayer (Eds.) The MIT Handbook of Game-based Learning.

63. Ketelhut, D.J., & **Nelson, B.** (2017). Designing, Implementing and Researching the Effects of Narrative-Based Assessment in Virtual Environments. In R. W. Lissitz & H. Jiao (Eds.). *Technology Enhanced Innovative Assessment: Development, Modeling, and Scoring from an Interdisciplinary Perspective.* Charlotte, NC: Information Age Publisher. P. 53-70.

64. **Nelson, B.** (2016). Authentic learning: a route to student attainment: Critical friend commentary. In G. Steventon, D. Cureton, and L. Clouder (Eds.). Student Attainment in Higher Education: Issues, Controversies, and Debates. Routledge.

65. Clark, D. B., **Nelson, B.**, Atkinson, R., Ramirez, F., & Medina, W. (2014). Integrating Flexible Language Supports Within Online Science Learning Environments. In R. Bloymeyer, T. Ganesh, & H. Waxman (Eds.) *Research on Technology Use in Multicultural Settings*. Information Age Publishing.

66. **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.

67. **Nelson, B.,** Ketelhut, D.J., *Kim, Y. *Foshee, C., *Slack, K. (2013). Design Principles in Creating Educational Virtual Worlds. In C. Mousa & N. Lavigne (Eds.) *Emerging Technologies in the Classroom: A Learning Sciences Perspective.* Springer. P. 205-223.

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

69. 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*: Sense Publishers.

70. 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.

71. **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 Shelton, B. & Wiley, D. (Ed.), *The Educational Design and Use of Computer Simulation Games.* Sense Publishers.

72. Dede, C., Dieterle, E., Clarke, J., Ketelhut, D., & **Nelson, B.** (2007). Media-based learning styles. In M. Moore (Ed.), Handbook of Distance Education. Erlbaum.

BOOK REVIEWS

Nelson, B. (2004). Quality Curricula. Review of Todd Oppenheimer's "The Flickering Mind." *Education Next*, *4(3*), 79-82.

REFERRED CONFERENCE PRESENTATIONS AND WORKSHOPS

1. *Pérez Cortés, L. E., *****Ha, J., *Su, M., & **Nelson, B.** (2021, June). GuARdians of tomorrow: A compelling simulation for understanding sustainability. Poster presented at the Annual Meeting of the International Society of the Learning Sciences (ISLS), *Online format.*

2. Ketelhut, D.J. & **Nelson, B**. (2020, April). *Immersive Virtual Environments: Impact on Self-Efficacy*. Paper accepted at the American Educational Research Association (AERA) 2020 meeting, San Francisco, CA. (Conference cancelled due to COVID-19).

3. *Ha, J., *Pérez Cortés, L. E., *Su, M., **Nelson, B.,** Bowman, & Bowman, J. (2020, April*). Media-enhanced group inquiry and interaction in museums using Ask Dr. Discovery.* Paper accepted at the American Educational Research Association (AERA) 2020 meeting, San Francisco, CA. (Conference cancelled due to COVID-19).

4. **Nelson, B.,** Gharavi, L., Janssen, M., & Anderies, M. (2019, October). Port of Mars: Exploring Social Systems and Practices for Sustaining Communities on Mars. Presented at the 13th European Conference on Games Based Learning, Denmark.

5. Sleasman, S., Mak, J., **Nelson, B.**, Breen, M., Castelhano, J., & Knight, M. (2019, July*). Arizona Computer Science: from Standards to Implementation*. Presentation given at the Computer Science Teachers Association conference, Phoenix, AZ.

6. **Nelson, B.,** Bowman, C., Bowman J., & Korinko, J. (2017, April). *Gaming Dr. Discovery: Iterative game design for informal science learning.* Paper presented at the American Educational Research Association (AERA) 2017 meeting, San Antonio, TX.

7. Ketelhut, D. & **Nelson, B.** (2017, April). *Blending Formal and Informal Learning Environments: The Case of SAVE Science.* Paper presented at the American Educational Research Association (AERA) 2017 meeting, San Antonio, TX.

8. **Nelson, B.,** Bowman, C., & Bowman J (2016, October 7). *Playing with Dr. Discovery: Facilitating Museum Evaluation Through a Casual Game*. Presented at the 10th European Conference on Games Based Learning, Scotland.

9. **Nelson, B.,** Bowman, C., Bowman J., Korinko, J., Fernandez, I., Hufford, M., Iyengar, R., Meziani, I., Rogers, K., Yennam, D., Eastman, K., and Custer, S. (2016, April 11). *Designing for Data with Ask Dr. Discovery: Facilitating Museum Evaluation with Real-Time Data Mining*. Presented at AERA 2016, Washington, D.C.

10. **Nelson, B**. & Ketelhut, D.J. (2015, October). *Weather Trouble: A game-based assessment of science inquiry and content knowledge*. 9th European Conference on Games Based Learning. Norway.

11. 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.

12. Coon, A., Ketelhut, D.J., Mills, K., Natarajan, U., Gong, X., **Nelson, B.** (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.

13. **Nelson, B.**, Ketelhut, D., Schifter, C., Vacetic, S., Sil, Avirup, *Kim, Y., Zhang, S., & *Slack, K. (2014, October). *Basketball Trouble: A Game-Based Assessment of Science Inquiry and Content Knowledge.* Featured Research Paper presented at the Association for Educational Communications and Technology conference, Jacksonville, FL.

14. *Enciso, A. & **Nelson, B.** (2014, April). Effects of Text, Audio, and Learner Control on the Text-Sound Association and Cognitive Load of Learners of English as a Foreign Language. Paper presented at the American Educational Research Association (AERA) 2014 meeting, Philadelphia.

15. Ketelhut, D., & **Nelson, B.** (2013, June). *Situated Assessment Using Virtual Environments for Science Content and Inquiry (SAVE Science)*. Workshop given at the Immersive Ed 2013 Summit, Boston, MA.

16. Ketelhut, D., **Nelson, B.,** Sil, A., Yates, A. (2013, May). *Discovering What Students Know Through Data Mining Their Problem-Solving Actions Within the Immersive Virtual Environment SAVE Science.* Paper presented at the American Educational Research Association (AERA) 2013 meeting, San Francisco, CA.

17. *Slack, K., **Nelson, B.,** Clark, D., & Martinez-Garza, M. (2012, October). *Framework for Enhancing Tacit Understanding and Transfer in an Educational Physics Game Context*. Paper presented at the Association for Educational Communications and Technology conference, Louisville, KY.

18. *Slack, K., **Nelson, B**., *Kim, Y., & *Foshee, C. (2012, October). *SAVE Science: Inquiry and Assessment through an Immersive Virtual* Environment. Paper presented at the Association for Educational Communications and Technology conference, Louisville, KY.

19. *Erlandson, B., *Denham, A., *Slack, K., *Lin, L., & **Nelson, B.** (2012). *Designing Smart Worlds: Automated Scoring of Learners' Transportation Decisions in a Virtual Urban Commuting Simulation.* Paper presented at the American Educational Research Association (AERA) 2012 meeting, Vancouver, British Columbia, Canada.

20. Martinez-Garza, M., Clark, D.B., **Nelson, B.,** *Slack, K., & *D'Angelo, C. (2012). *Investigating Cognitive Factors that Mediate Learning in the Context of a Physics-Based Game.* Paper presented at the American Educational Research Association (AERA) 2012 meeting, Vancouver, British Columbia, Canada.

21. *Lin, L., Atkinson, R. K., **Nelson, B.,** & Savenye, W. C. (2012, April). *Learning with multimedia: Are visual cues and self-explanation prompts effective?* Paper presented at the American Educational Research Association (AERA) 2012 meeting, Vancouver, British Columbia, Canada.

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

23. Clark, D. B., **Nelson, B.,** Chang, H., *D'Angelo, C. M., *Slack, K., & Martinez-Garza, M., (2011). *Exploring Newtonian Mechanics in a Conceptually-Integrated Digital Game: Comparison of Learning and Affective Outcomes for Students in Taiwan and the United States*. Paper presented at the Games, Learning, & Society Conference 7.0, Madison, WI.

24. Martinez-Garza, M., Clark, D. B., **Nelson, B.,** *Slack, K., & *D'Angelo, C. (2011). *Novel approaches to gameplay data analysis as an assessment of learning.* Paper presented at the Games, Learning, & Society Conference 7.0, Madison, WI.

25. Clark, D. B., **Nelson, B.,** Martinez-Garza, M., *Slack, K., & *Garvey, D. (2011). *Scaffolding Student Metacognition About Connections Between Intuitive Ideas and Formal Concepts In Conceptually-Integrated Digital Games*. Paper presented at the Jean Piaget Society 2011 meeting. Berkeley, CA.

26. *Slack, K., **Nelson, B.,** Clark, D. B., & Martinez-Garza, M. (2011). *Model-Based Thinking in the Scaffolding Understanding by Redesigning Games for Education (SURGE) Project*. Poster presented at the American Educational Research Association (AERA) 2011 meeting. New Orleans, LA.

27. Martinez-Garza, M., Clark, D. B., **Nelson, B.,** & *Slack, K. (2011). *Assessing Students' Intuitive Understanding of Physics Through Game Play Data*. Paper presented at the American Educational Research Association (AERA) 2011 meeting. New Orleans, LA.

28. Clark, D. B., **Nelson, B.,** Martinez-Garza, M., *Slack, K., & D'Angelo, C. M. (2011). *Prediction and Explanation as Design Mechanics in Conceptually-Integrated Digital Games to Help Players Articulate the Tacit Understandings they Build Through Gameplay.* Poster presented as part of a structured poster session at the National Association of Research 2011 meeting. Orlando, FL.

29. Clark, D. B., **Nelson, B.,** Martinez-Garza, M., *Slack, K., & *D'Angelo, C. M. (2011). *SURGE: Embodied Learning About Newtonian Mechanics*. Paper presented as part of symposium at the National Association of Research 2011 meeting. Orlando, FL.

30. Clark, D. B., **Nelson, B.,** Martinez-Garza, M., *Slack, K., & *Garvey, D. (2010). *Integrating Prediction Into Navigation Interfaces and Explanation Into Dialog To Help Students Articulate Tacit Understandings*. Poster presented as part of a structured session at the NSF Discovery Research: K-12 2010 meeting. Washington, DC.

31. Schifter, C.C., Ketelhut, D.J., and **Nelson, B.** (2011). *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.

32. 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.

33. Ketelhut, D.J., Schifter, C., & **Nelson, B**. (2010). *How to Design Immersive Virtual Worlds to Assess Understanding of Science Content and Process.* Paper presented at the 2010 Games, Learning, and Society Conference, Madison, WI.

34. Clark, D., **Nelson, B.,** D'Angelo C., *Slack, K., & Martinez-Garza, M. (2010). *SURGE, Vygotsky, Games: Connecting Students' Intuitive "Spontaneous Concepts" about Newtonian Mechanics into Formalized Instructed Concepts*. Poster presented at the 2010 Games, Learning, and Society Conference, Madison, WI.

35. **Nelson, B.,** Ketelhut, D.J., Schifter, C., Mudegowder, D., Freeman, Z., & *Kim, Y. (2010). *Improving Science Assessments by Situating them in Virtual Environments: The SAVE Science Project*. Poster presented at the 2010 American Educational Research Association Conference, Denver, CO.

36. Clark, D., **Nelson, B., ***D'Angelo C., *Slack, K., & Menekse, M. (2010). *SURGE: Assessing Students' Intuitive and Formalized Understandings About Kinematics and Newtonian Mechanics Through Immersive Game Play*. Poster presented at the 2010 American Educational Research Association Conference, Denver, CO.

37. *Slack, K., **Nelson, B.,** Clark, D., *D'Angelo, C., & Menekse, M. (2010). *Visual Cueing and Visual Feedback to Provide Formative Assessment in a Physics-Based Video Game.* Poster presented at the 2010 American Educational Research Association Conference, Denver, CO.

38. Ketelhut, D.J., **Nelson, B.,** & Schifter, C. (2009). *Virtual Environments for Situated Science Assessment.* Paper presented at IADIS CELDA 2009, Rome, Italy.

39. Schifter, C., Ketelhut, D.J., & **Nelson, B.** (2009*). SAVE Science: Presence Theory and Virtual Games.* Paper presented at IADIS CELDA 2009, Rome, Italy.

40. Reiser, R., Anglin, G., Clinton, G., **Nelson, B.,** Klein, J., & Wilson, B. (2009). *Trends and Issues in Instructional Design and Technology: What Shall be Taught and How Shall We Teach It?* Symposium presented at the American Educational Communication and Technology Conference, Louisville, KY.

41. **Nelson, B.**, Ketelhut, D.J., & Schifter, C. (2009). *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.

42. **Nelson, B.**, & *Erlandson, B. (2009). *Managing cognitive load in educational multi-user virtual environments through cognitive processing-based design*. Paper presented at AERA Annual Meeting in San Diego.

43. *Erlandson, B., & **Nelson, B.** (2009). *Fostering ecoliteracy: Virtual worlds for guided naturalistic inquiry of complex ecological systems*. Paper presented at AERA Annual Meeting in San Diego.

44. *Erlandson, B. & **Nelson, B.** (2009). *Design and development of a virtual world for learning life skills.* Poster presented at AERA Annual Meeting in San Diego.

45. *Erlandson, B. & **Nelson, B.** (2008). *The Effect of Collaboration Modality on Cognitive Load in a Situated Inquiry Environment.* Paper presented at the American Educational Communication and Technology Conference, Orlando, FL.

46. Ketelhut, D.J., Clarke, J., **Nelson, B.,** & Dukas, G. (2008). *Rethinking Pedagogy: Using multi-user virtual environments to foster authentic science learning.* Paper presented at the International Conference of the Learning Sciences, Utrecht, Netherlands.

47. **Nelson, B.** & *Erlandson, B. (2008). *Managing cognitive load in educational multi-user virtual environments: the spatial contiguity principle.* Poster presented at the 2008 American Educational Research Association Conference, New York, NY.

48. *Erlandson, B. & **Nelson, B.** (2007). *Designing for learning with multimedia principles in educational multi-user virtual environments.* Paper presented at the American Educational Communication and Technology Conference, Anaheim, CA.

49. Ketelhut, D.J. & **Nelson, B.** (2007). *Exploring Embedded Guidance and Self-efficacy in Educational Multi-user Virtual Environments.* Short paper presented at the Computer Supported Collaborative Learning Conference, New Brunswick, NJ.

50. **Nelson, B.** & *Erlandson, B. (2007). *Multimedia design principles for learning in multi-user virtual environments.* Paper presented at the 2007 American Educational Research Association Conference, Chicago, IL.

51. **Nelson, B.,** Ketelhut, D., Clarke, J., Dieterle, E., Dede, C., & *Erlandson, B. (2007, April). *Robust design strategies for scaling educational innovations: The River City MUVE case study.* Paper presented at the 2007 American Educational Research Association Conference, Chicago, IL.

52. Clarke, J., Ketelhut, D., **Nelson, B., ***Erlandson, B., Dieterle, E., & Dede, C. (2007, April). *Investigating students' behaviors, patterns, and learning in a multi-user virtual environment designed around inquiry.* Paper presented at the 2007 American Educational Research Association Conference, Chicago, IL.

53. **Nelson, B.,** Ketelhut, D., Clarke, J., & Dede, C. (2006, October). *Designing for Real-World Inquiry in Virtual Environments.* Paper presented at AECT 2006, Dallas, TX.

54. Ketelhut, D., **Nelson, B.,** Clarke, J., & Dede, C. (2006, October). *Studying Near and Far Transfer in a Multi-User Virtual Environment.* Paper presented at AECT 2006, Dallas, TX.

55. **Nelson, B.** (2006, April). The Efficacy of Individualized, Reflective Guidance for Student Learning in an Educational Multi-user Virtual Environment. Paper presented at the American Education Research Association, San Francisco.

56. Ketelhut, D. J., **Nelson, B.,** Dede, C., & Clarke, J. (2006, April). *Inquiry Learning in Multi User Virtual Environments.* Paper presented at NARST 2006, San Francisco.

57. Clarke, J., Dede, C., Ketelhut, D. J., **Nelson, B.,** & Bowman, C. (2006, April). *Multi-User Virtual Environments (MUVEs) as Research Tools to Assess Student Learning.* Paper presented at the American Education Research Association, San Francisco.

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

59. **Nelson, B.** (2005, October). Investigating the Impact of Individualized, Reflective Guidance On Student Learning in an Educational Multi-User Virtual Environment. Paper given at AECT 2005, Orlando, FL.

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

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

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

63. Dede, C., Ketelhut, D., **Nelson, B**., Clarke, C. & Bowman, C. (2004, June). *Workshop on design based research of multi-user virtual environments.* Workshop given at IDC 2004, College Park, MD.

64. Dede, C., Ketelhut, D. & **Nelson, B.** (2004, April). Design-Based Research on Gender, Class, Race, and Ethnicity in a Multi-User Virtual Environment. Paper given at AERA 2004, San Diego, CA.

65. **Nelson, B.** (1999, October). *Moving Language Curriculum onto the Internet.* Paper presented at the 1999 WebNet Conference, Honolulu, Hawaii.

66. **Nelson, B.** (1999, October). *Tracking learner data in web-based activities.* Demonstration given at the 1999 JALT Conference, Gunma, Japan.

67. **Nelson, B.** (1999, October). Creating web-based activities with Director: an introduction. Presentation given at 'Calling Asia', an International Conference on Computers and Language Learning, Kyoto, Japan.

68. Wakao, A. & **Nelson, B**. (1999, August). *Designing and Implementing Web-based Activities for Integrated Use in the EFL Classroom.* Presentation given at the LLA Language Education in a Multimedia Environment conference, Tokyo, Japan.

69. Wakao, A. & **Nelson, B.** (1999, May) *Integrating CALL into the curriculum in Japan.* Presentation given at 'Calling Asia', an International Conference on Computers and Language Learning, Kyoto, Japan.

70. **Nelson, B.** (1998, October). *Creating web-based vocabulary and reading comprehension activities.* Presentation given at the Central Japan Language Education Workshop, Kanazawa, Japan.

71. **Nelson, B.** (1998, March). *Multimedia computer projects in the ESP classroom*. Poster Session given at the 32nd annual TESOL International Convention, Seattle, WA, USA.

72. **Nelson, B.** & Wakao, A. (1994, November). Student-created multimedia programs in the ESL classroom. Presentation given at Northern New England TESOL Conference, New Hampshire, USA.

INVITED PAPERS AND TALKS

1. **Nelson, B.** (2018, September). *Design for Learning and Assessment in Virtual Worlds.* Invited keynote presentation at the University of Maryland, College Park.

2. **Nelson, B.** (2014, August). *Design for Learning and Assessment in Virtual Worlds.* Invited keynote presentation at the 21st Century Academic Forum Conference, Berkeley, CA.

3. **Nelson, B.** (2012, November). *Design for Learning in Virtual Worlds.* Invited keynote presentation at Science and Art: Third International Forum on the Innovations in Digital Media, Beijing, China.

4. **Nelson, B.** (2010, May). *Sources of Evidence for Embedded Assessment in Immersive Game Worlds.* Invited Talk presented at the 2010 Games for Change Festival. New York, NY.

5. Hickey, D. & **Nelson, B.** (2010, January). *Measuring Classroom Progress: 21st Century Assessment Project Wants Your Input:* Invited paper from a MacArthur foundation supported investigation into assessment themes associated with the Race to the Top government educational initiative.

6. Clark, D., **Nelson, B**., Sengupta, P., & *D'Angelo, C. (2009, October). *Rethinking Science Learning Through Digital Games and Simulations: Genres, Examples, and Evidence.* Invited paper presented at the Learning Science: Computer Games, Simulations, and Education Workshop, hosted by the National Research Council. Washington, DC.

7. **Nelson, B.** (2006, June). *The Efficacy of Individualized, Reflective Guidance for Student Learning in an Educational Multiuser Virtual Environment.* Invited talk presented at the Distributed Learning and Collaboration Symposium on Theory, Research, and Practice. Shanghai, China.

8. **Nelson, B.** (2006, October). *The River City Project: A Multi-user Virtual Environment for Learning Science and 21st Century Skills.* Invited talk presented at the Classrooms without Quizzes event, Arizona State University.

EXTRAMURAL RESEARCH FUNDING

National Science Foundation (NSF). Accessible Computational Thinking (ACT) in Elementary Science Classes within and across Culturally and Linguistically Diverse Contexts. 2021-2024. $931,000. Principal Investigator. ACT investigates best practices for providing experiences for all elementary children to participate in and engage with computational thinking (CT) integrated into science instruction. Specifically, we explore how elementary science teachers develop the skills and dispositions to provide access to CT for culturally and linguistically diverse learners by incorporating Culturally Responsive Teaching (CRT) practices.

Google. Integrating Bootstrap units into middle and high school algebra classes using GSuite. 2018-2019. PI: Jeff Billings. Senior personnel: Brian Nelson. This Google funded grant is focused on creation of PD to help integrate the Bootstrap CS/Math curriculum into middle and high school courses in Paradise Valley Schools, Arizona.

National Science Foundation (NSF). Facilitating Museum Evaluation with Real-Time Data Mining (Dr. Discovery). 2014-2018. $850,000. Co-Principal Investigator. Dr. Discovery is developing and implementing an innovative app for mobile devices, composed of two parts: 1) a front-end "virtual scientist" called *Dr. Discovery* (*Dr. D*) for use by museum visitors (and docents) that doubles as an unobtrusive data-gatherer and 2) a back-end analytics portal to be mined by museum staff, evaluators, and researchers.

National Science Foundation (NSF). SAVE Science (Situated Assessment in Virtual Environments for Science). 2008-2015. $2,800,000. PI of ASU sub-contract, Co-Principal Investigator. *SAVE Science* is designing and implementing a series of virtual environment situated modules for assessing science content and inquiry in middle schools in the School District of Philadelphia. The modules make use of a novel assessment rubric based on student interactions within an authentic context-based science curriculum, embedded in a virtual environment.

National Science Foundation (NSF). SURGE (Scaffolding Understanding by Redesigning Games for Education). 2008-2011. $450,000. PI of ASU sub-contract, Co-Principal Investigator. SURGE developed and assessed design principles, and learning environments instantiating these principles, that integrate research on conceptual change, cognitive processing based design, and socio-cognitive scripting into the design of popular commercial video games to support students' understanding of Newtonian mechanics. The goals of SURGE focused (1) on increasing eighth grade students' understanding of Newtonian mechanics including core elements from high school curricula (2) while retaining the strong motivational components of current commercial game design, and (3) and helping close achievement, motivation, and self-efficacy gaps among female students, English language learners, and students of color.

MacArthur Foundation. *21st Century Assessment.* 2007-2010. $1,600,000. Co-Principal Investigator. The 21st Century Assessment Project had three primary goals: The first goal was to engage in collaborative discussions and research towards the development of new models of assessment and learning in digital media environments focused on enacting substantive change in the way we engage in the assessment of learning, especially technology-enhanced learning, in and out of schools. The second goal was to find, study, and explicate exemplary instances of assessment integrated with sociocultural-situated and media-and-technology enhanced learning. The third goal of the Project was to collaborate with the other MacArthur-funded New Digital Media and Learning projects to help them think about and implement models of assessment suitable for innovative learning interventions.

MacArthur Foundation. *Our Courts.* 2008-2010. $500,000. Co-Principal Investigator. The Our Courts project, headed by former Supreme Court Justice Sandra Day O'Conner, focused on the design, development, implementation, and evaluation of online computer games to teach high school students about the U.S. Court system. In the Our Courts game, learners participate in quests that allow them to learn about the legal system while engaging in data gathering, inquiry, and realistic courtroom procedures.

National Science Foundation (NSF). *Studying Robust-Design Strategies for Developing Innovations Effective and Scalable in Challenging Classroom Settings.* 2005-2008. $1,700.000. Principal Investigator of ASU sub-contract ($134,000). Responsible for designing the educational software and technology-based content used in this grant. Managed a group of graduate student designers and researchers at Arizona State University.

National Science Foundation (NSF). *CareerBound: Internet-Delivered Resilience Training to Increase the Persistence of Women Ph.D. Students in STEM Fields.* 2006-2009. $1,000,000. Senior Personnel. I worked with a large team on the design of a web-based training program designed to increase persistence of female Ph.D. students in science, technology, engineering, and math.

Kauffman Foundation. *University as Entrepreneur* 2005-2008. $5,000,000. Subject Matter Expert, Educational Technology/Instructional Design. Designed an immersive educational gaming environment for the "My Life Venture" university course focused on teaching financial literacy and entrepreneurial skills to undergraduate students at ASU.

National Science Foundation (NSF). *MSP: Project Pathways:* 2004-2008. $12,300,000. Senior Personnel (2006-2007). Designed an online 'virtual counseling center' aimed at increasing involvement among young women in science, math, and technology fields. The project is investigating the learning impact of animated pedagogical agents in web-based interactive counseling sessions.

National Science Foundation (NSF). *Studying Situated Learning and Knowledge Transfer in a Multi-User Virtual Environment.* 2003-2005. Research Assistant/Project Designer. Responsible for designing and creating the educational software and technology-based content used in this grant.

INTRAMURAL RESEARCH FUNDING

Arizona State University. *Port of Mars*. 2017-2019. PI: Lance Gharavi. Co-PI: Brian Nelson. Port of Mars is developing a card game designed to explore questions of what social, political, and economic systems will best support human habitation of Mars. Port of Mars is a pilot study funded internally as part of ASU's Interplanetary Initiative.

Mary Lou Fulton College of Education Research Program. *A Cognitive-Processing Framework for Designing Educational Multi-User Virtual Environments.* Principal Investigator. 2007-2008. $15,000. Designed and implemented "SimLandia", a multi-user virtual environment science inquiry curriculum. SimLandia was used as a platform to investigate the application of cognitive processing-based design principles to reduce extraneous cognitive load experienced by learners in complex virtual worlds.

University of Aizu, Japan. *Online Reading Program for English for Specific Purposes.* 1998-1999. Principal Investigator for an in-school grant. Designed, created, and implemented web-based reading course for freshman engineering students at a Japanese university.

University of Aizu, Japan. *Online Listening Program for English for Specific Purposes.* 1998-1999. Principal Investigator for an in-school grant. Designed, created, and implemented web-based listening activities for Japanese engineering students.

FUNDED RESEARCH ADVISORY BOARDS

EPOESS project (NASA): 2011-2013. External Evaluator.

National Science Foundation (NSF): *Gateways to Algebraic Motivation, Engagement, and Success (GAMES).* 2011-2013. Advisory Board Member.

National Science Foundation (NSF): *Martian Boneyards.* 2009-2011. Advisor Board Member.

Teaching and Mentoring

STUDENT MENTORING

Graduated PhD students: Mary Lou Fulton Teachers College (chaired or co-chaired), showing placement after graduation

1. Pérez Cortés, Luis (2021). Learning, Literacies, and Technologies, Teachers College. "Literacies at Play: Digital-Age Literacies in High School Esports." University of Pittsburgh.

2. Savvides, Philippos (2018). Educational Technology, Teachers College. "Teaching Science Lab Safety: Are Virtual Simulations Effective?" Arizona State University.
3. Tarr, Julie (2018). Educational Technology, Teachers College. "Using Instructional Design and Cognitive Load Theories to Improve the Efficiency of a Video-based College Algebra Learning Environment through a Note-taking Guide and Learner Control."
4. Brown, Andrew (2016). Educational Technology, Teachers College. "A Case Study of Modern Instruction in an Enterprise Environment." Arizona State University.
5. Pilbeam, Renee (2016). Educational Technology, Teachers College. "Concussion Awareness Education: A Design and Development Research Study." Arizona State University.
6. Horton, Scott (2014). "High Fidelity Virtual Environments: Does Shader Quality or Higher Polygon Count Models Increase Presence and Learning?" Art Institute of Phoenix.
7. Butler, Nick (2014). "Learning to Speak in the Digital Age: An Examination of Instructional Conditions for Teaching Public Speaking Online". University of Maryland, Europe.
8. Enciso, Ana (2014). "Effects of Text, Audio, and Learner Control on Text-Sound Association and Cognitive Load of EFL Learners". Universidad Autonoma de Zacatecas, Mexico.
9. Kim, Scott (2013). "Analyses of Receptive and Productive Korean EFL Vocabulary: Computer-based Vocabulary Learning Program". Kwandong University, Korea
10. Lewis, Carrie (2013). "Preservice Teachers' Ability to Identify Technology Standards: Does Curriculum Matter?". Benedictine University/Minnesota State University
11. Andre Denham (2012). "Conceptual Understanding of Multiplicative Properties through Endogenous Digital Game Play": University of Alabama.
12. Ben Erlandson (2010). "Fostering ecological literacy: recognizing and appreciating emergence in a complex virtual inquiry environment": Cal State, Monterey Bay.
13. Caroline Harrison (2009). "Narration in Multimedia Learning Environments: Exploring the Impact of Voice Origin, Gender, and Presentation Mode: ASU Post-doc.
14. Alan Koenig (2008) "Exploring Effective Educational Video Game Design: the Interplay Between Narrative and Game-Schema Construction": National Center for Research on Evaluation, Standards, & Student Testing, UCLA.

Graduated master's students: Computer Science (chaired or co-chaired)

1. Kury, Nizar (2017). Computer Science Masters, SCIDSE. "Assessing adaptive learning styles in computer science through a virtual world".
2. Damania, Harsh (2016). Computer Science Masters, SCIDSE. "Exploring the use of tablet applications for emergency resuscitation practice."
3. Frisby, Joshua (2015). Computer Science Masters, SCIDSE. Contextual computing: tracking healthcare providers in the emergency department via Bluetooth beacons.

Honors Theses:

1. Kury, Nizar and West, Grant (2016). Computer Science Honors thesis. "System Dot: Shifting the Programming Paradigm."
2. Le, Jefferson, Pinho, Tyler, and Spence, Curtis (2016). Last Hymn.
3. Johnson, Peter (2015) Computer Science Honors thesis. "Keyboard Biometric Authentication Spoofing."

HIGHER EDUCATION COURSES TAUGHT

(MLFTC: Teachers College. SCIDSE: Computer Science)

Graduate Level:

- MLFTC: DCI 691 (ASU) – Education by Design
- MLFTC: DCI 791 (ASU) – Transdisciplinary Seminar
- MLFTC: EDT 591 (ASU) – Educational Games and Simulations
- MLFTC: EDT 501 (ASU) – Foundations and Issues in Educational Technology
- MLFTC: EDT 504 (ASU) – Educational Software Design/Modalities of Learning
- MLFTC: EDT 580/584 (ASU) – Internship/Practicum
- MLFTC: EDT 792 (ASU) – Advanced Educational Technology Research
- MLFTC: EDT 799 (ASU) – Dissertation Research
- SCIDSE: CS 598 (ASU) – Design for Learning in Virtual Worlds
- (Harvard): TIE 501k – Guidance and Adaptability in Educational Software Design

Undergraduate Level:

- MLFTC: EDT 494 (ASU) – Introduction to Computer Science for Educators
- MLFTC: EDT 394 (ASU) – Educational Games and Simulations
- MLFTC: EDT 321 (ASU) – Computer Literacy
- SCIDSE: CPI 111 (ASU) – Beginning Game Development
- SCIDSE: CPI 211 (ASU) – 3D Game Development
- SCIDSE: CS 494 (ASU) – Design for Learning in Virtual Worlds
- SCIDSE: CPI 462 (ASU) – Design for Learning in Virtual Worlds
- SCIDSE: CS 301 (ASU) – Computing Ethics
- (University of Aizu) – Academic Listening and Speaking
- (University of Aizu) – Technical Reading 1
- (University of Aizu) – Technical Reading 2
- (University of Aizu) – English Pronunciation
- (Kanazawa College of Technology) – Listening and Speaking
- (Kanazawa College of Technology) – English Reading
- (Kanazawa College of Technology) – Multimedia Production

Service

(MLFTC: Teachers College. SCIDSE: Computer Science)

UNIVERSITY

- 2007: Invited to and participated in an ASU-sponsored visit to Finland. Met with members of Finland government, President of Helsinki University of Technology, U.S. Ambassador to Finland and others to help establish formal educational and research partnership with Finland.
- 2007 – 2008: Served as a Faculty Advisory Board Member for the University as Entrepreneur initiative at ASU, a $5 million grant funded by the Kaufmann foundation.

COLLEGE/SCHOOL

- *2019 – 2021:* MLFTC: Chair, Non-Tenure Track Faculty Personnel Committee
- *2017 – 2021:* MLFTC: Member, Doctoral Programs Executive Committee
- *2017 – 2018:* MLFTC: Member, Non-Tenure Track Faculty Personnel Committee

- *2015 – 2017:* SCIDSE: Computer Science Personnel Committee
- *2006 – 2010:* MLFTC: Member, College Elections Committee
- *2007 – 2009:* MLFTC: Member, College Council, College of Education
- *2007 – 2009:* Chair, College Elections Committee, College of Education
- *1999 – 2000*: Faculty Council Member, University of Aizu, Japan

DIVISION

- *2020 – Present: Program Coordinator, MA in Education*
- *2020 – Present: Program Coordinator, MA in Education, Mandarin*
- *2019 – 2020:* MLFTC: Associate Director, Division of Ed Leadership and Innovation
- *2007 – 2012:* MLFTC: Member, Division of Psychology in Education Affirmative Action Committee
- *2006 – 2012:* MLFTC: Member, Division of Psychology in Education Awards Committee
- *2005 – 2012:* MLFTC: Member, Division of Psychology in Education Curriculum Committee

PROGRAM

- *2018 – 2021:* Chair, LLT PhD Program committee
- *2016 – 2018:* MLFTC: Member, LLT PhD Program committee
- *2012 – 2018*: SCIDSE: Chair, Informatics University Program Committee
- *2005 – Present:* MLFTC: Member, Educational Technology Program Admissions Committee
- *2005 –2010:* Faculty Advisory Board member for the *Arts, Media, and Engineering* (AME) Program
- *2007 – 2008:* Faculty Advisory Board member for the *My Life Venture* Undergraduate Program in Carey School of Business
- *2003*: Graduate School of Education Admissions Committee, Harvard University

EDITORIAL BOARDS AND REVIEWER SERVICE

- 2013 – Present: Editorial Board Member, Technology, Knowledge, and Learning Journal
- 2007 – Present: Editorial Board Member, Computers in Human Behavior
- 2005 – Present: Manuscript reviewer, Journal of Educational Computing Research
- 2006 – Present: Manuscript reviewer, Educational Technology Research and Development
- 2006 – Present: Manuscript reviewer, Journal of Science Education and Technology
- 2007 – Present: Manuscript reviewer, Science Education
- 2006 – Present: Manuscript reviewer, Educational Psychology Review
- 2005: Manuscript reviewer, Virtual Reality

PROFESSIONAL ORGANIZATION MEMBERSHIPS

- **CS for AZ: co-founder and co-director**
- **American Educational Research Association**
    - Division C: Learning and Instruction
    - Special Interest Groups: Applied Research in Virtual Environments for Learning, Advanced Technology for learning, Computer and Internet Applications in Education, Design and Technology, Instructional Technology, Technology, Instruction, Cognition, and Learning
- **Association of Educational Communications and Technology**
- **International Society of the Learning Sciences**
- **National Association for Research in Science Teaching**

- **International Association for Development of the Information Society**
- **Association for Computing Machinery**
- **Computer Science Teachers Association: VP of Arizona Chapter**

PROFESSIONAL ORGANIZATION SERVICE

- 2016 – present: Conference Committee, European Conference on Game-Based Learning
- 2018 – 2020: Computer Science Teacher Association: Vice President, Arizona chapter
- 2018 – 2019: Computer Science Teacher Association Conference Committee
- 2018-2020: Arizona Department of Education: Computer Science Education standards: drafting committee, standards reviewer
- 2009 – 2015: American Educational Research Association-Member of the Applied Research in Virtual Environments for Learning: SIG leadership committee
- 2010-2012: American Educational Research Association-Applied Research in Virtual Environments for Learning Treasurer/Secretary
- 2007-2009: American Educational Communication and Technology – AECT Curriculum Committee
- 2007-2008: A*merican Educational Communication and Technology* – Member of AECT Electronic Services Committee
- 2008: Executive Committee, Games, Learning, & Society Conference

SELECTED HONORS AND AWARDS

- 2020: Invited participant, Advanced Leadership Initiative, Arizona State University.
- 2019: Finalist, analog game division, European Conference on Game-Based Learning Games Competition. "Port of Mars" game.
- 2016: First Prize, mobile division, European Conference on Game-based Learning Games Competition, Second Prize overall. "Weather Trouble" assessment game.
- 2014: Featured Research, Invited 1-hour keynote: AECT 2014 Conference
- 2010: Outstanding Early Career Faculty: Invited Speaker at AECT 2010 Conference
- 2009: Co-author of Invited National Academy of Sciences Paper on Educational Games and Simulations
- 2008: Invited to and participated in NSF-sponsored Early Career Workshop at the International Conference on the Learning Sciences in Utrecht, Netherlands (July 2008). Collaborated with faculty mentors on grant proposal-writing methods and career goal setting
- 2007: Invited to and participated in NSF-sponsored Early Career Workshop at the Computer Supported Collaborative Learning conference at Rutgers University (July 2007). Collaborated with faculty mentors on grant proposal-writing methods and career goal setting.
- 2006: Invited to and participated in an NSF-sponsored workshop (June 2006) in Shanghai, China. The organizers of the "Distributed Learning and Cognition" workshop invited a group of faculty from across the world to explore cutting edge research in technology-based learning environments focused on cognition and collaborative knowledge construction. Invited to give a talk on designing individualized scaffolding for learners in multi-player computer games for science inquiry. Workshop participants included faculty from Stanford, Harvard, Cornell, and many others.

SOFTWARE DEVELOPMENT

ASU/School of Computing, Informatics, and Decision Systems Engineering, Tempe, AZ. Developed iPad version "Sheep Trouble" application as assessment tool for middle school science students. Testing student understanding of speciation. Development software: Unity, Objective C.

ASU/W.P. Carey School of Business, Tempe, AZ. Developed a multi-user virtual environment-based game to teach financial literacy skills to undergraduate students. Development software: Activeworlds, Adobe Flash.

ASU/CRESMET, Tempe, AZ. Developed "Believe It", an interactive online career counseling tool for high school girls. Development software: Adobe Flash.

Concord Consortium, Concord, MA. Software and curriculum development consultant for a $7 million-dollar government-funded grant. Adding scaffolding and feedback system to a series of educational software tools designed to teach science, math, and modeling concepts.

Concord Consortium, Concord, MA. Developed a series of web-based interactive models of plate tectonics. More than 2500 students in Massachusetts and California schools used the models.