

## Curriculum Vitae

Valerie J. Shute

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### General Information

University address: Instructional Systems & Learning Technologies  
Educational Psychology & Learning Systems  
College of Education, Health, and Human Sciences  
1114 West Call Street  
Florida State University  
Tallahassee, Florida 32306-4453

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### Professional Preparation

1984 Ph.D., University of California-Santa Barbara, Santa Barbara, CA. Major: Educational Psychology (specializations: Cognitive Psychology and Artificial Intelligence). Supervisor: Dr. James Pellegrino.

Valerie J. Shute. (1984). *Characteristics of Cognitive Cartography*. Unpublished doctoral dissertation, University of California-Santa Barbara, Santa Barbara, CA.

1981 M.A., University of California-Santa Barbara, Santa Barbara, CA. Major: Educational Psychology (specializations: Cognitive Psychology and Statistics). Supervisor: Dr. Lawrence Hubert.

Valerie J. Shute. (1981). *The Relationship between Testosterone Levels and Spatial Abilities in Humans*. Unpublished master's thesis, University of California-Santa Barbara, Santa Barbara, CA.

1977 B.A., University of Northern Colorado, Greeley, CO. Major: Psychology; Minor: Biology.

## Nondegree Education and Training

1984–1986 Post-doctoral fellowship. University of Pittsburgh, Learning Research and Development Center (LRDC), Pittsburgh, PA. Advisor: Dr. Robert Glaser. Design and development of intelligent tutoring systems.

## Professional Experience

2022–present Professor Emerita, Department of Educational Psychology and Learning Systems, Florida State University.

2011–2021 Professor, Instructional Systems Program, Educational Psychology and Learning Systems Department, Florida State University. conducting independent and collaborative research; writing grants and securing external funding; presenting at national and international conferences; teaching graduate classes; advising students; and serving on department, college, and university committees.

2007–2011 Associate Professor, Instructional Systems Program, Educational Psychology and Learning Systems Department, Florida State University. Responsibilities include conducting independent and collaborative research; writing grants and securing external funding; presenting at national and international conferences; teaching graduate classes; advising students; and serving on department, college, and university committees.

2007 Adjunct Instructor, Educational Psychology and Learning Systems Department, Florida State University.

2001–2007 Principal Research Scientist, Research & Development, Educational Testing Service (ETS), Princeton, NJ. Responsible for designing, developing, and evaluating basic and applied research projects related to: assessment, cognitive diagnosis, and learning using innovative instructional interventions and measurement methodologies.

2000–2001 Senior Research Scientist, Research & Development, KnowledgePlanet.com, Emeryville, CA. Responsible for conducting research and development activities relating to the design of advanced training technologies and student modeling efforts (cognitive and noncognitive attributes).

1999–2000 Director of Research & Development, GKIS, Inc., Houston, TX. Responsible for research plans and projects related to developing and evaluating intelligent instructional and training systems as well as managing the laboratory.

1986–1999 Senior Research Scientist, Air Force Research Laboratory, San Antonio, TX. Responsible for conducting basic and applied research in the areas of

intelligent tutoring systems, student modeling algorithms, knowledge elicitation programs, and other basic science research on learning, instruction, and training.

- 1981–1984 Teaching Assistant, UCSB. Taught graduate students in Artificial Intelligence course at UCSB; Introductory Statistics course to graduate students at Antioch University (Santa Barbara, CA), and tutored Advanced Statistics to graduate students at UCSB.
- 1979–1984 Research Assistant, Educational Psychology department, UCSB. Multiple projects including: comprehension of complex spatial visualization tasks, effects of extended practice on spatial skills; modeling and simulating navigational skills; and developing process models of spatial cognition.

### Honors, Awards, and Prizes

- Top 1000 U.S. scientists for Social Sciences and Humanities, Research.com (<https://research.com/u/valerie-j-shute>) (2025).
- Shaping the Future of Measurement--Valerie J. Shute (<https://www.linkedin.com/pulse/valerie-j-shute-pioneering-future-learning-assessment-eric-tucker-f9qhc/?trackingId=84xaFxzJweIMQDVrB%2BmykA%3D%3D>), Gordon Commission Study Group (2024).
- Forbes magazine Interview: Creativity research with games (<https://www.forbes.com/sites/andreamorris/2021/12/29/science-needs-a-better-way-to-study-creativityvideo-games-might-be-the-answer/?sh=52461c14ea4a&fbclid=IwAR01XIrI5SZ7GEaTaoRVFU4Vw>) (2020).
- NPR Interview: Should This Exist? Tech alternatives to the SAT (<http://listen.shouldthisexist.com/TestingCameo>) (2020).
- Best Student Paper Award--Eloy, L., Stewart, A., Amon, M. J., Reinhardt, C., Michaels, A., Sun, C., Shute, V. J., Duran, N., & D'Mello, S. K. (2019). Modeling team-level multimodal dynamics during multiparty collaboration. In L. Wang & X. Chai (Ed.), *ICMI 2019* (2019).
- Featured in the APA Monitor (<https://tinyurl.com/y2djn6gm>), American Psychological Association (2019).
- 2017 Outstanding International Research Collaboration Award--LEADS research, AERA (Technology, Instruction, Cognition, and Learning SIG) (2017).
- Transformation Through Teaching Award, Florida State University (2017).
- FSU Graduate Faculty, Teaching Excellence award (nomination), Florida State University (2016).
- National Education Technology Plan, Dept. of Education (2016).
- Best Paper Award, 17th International Conference on Artificial Intelligence in Education (2015).
- Best Student Paper Award, 17th International Conference on Artificial Intelligence in Education (2015).
- FSU Graduate Faculty Mentor Award, Florida State University (2015).
- FSU Innovators Award for licenses and commercialization of Physics Playground, Florida State

University (2015).

Featured article (January-February 2014) Valerie J. Shute, A Significant Contributor to the Field of Educational Technology, Educational Technology, by L. McCalla & T. Reeves (2014).

Featured article (September 2014) in Popular Science: Portal 2 Improves Cognitive Skills More Than Lumosity Does, Study Finds, by Francie Diep, Popular Science (2014).

Featured story (August 2014), New partnership uses video games to teach physics, by Kathleen Haughney, FSU-News (2014).

Featured presentation at the Brookings Institute on Assessment in games, Brookings Institute (2013).

Innovator Award, FSU Office of Commercialization and the FSU Research Foundation (2013).

Featured article on stealth assessment research in the Washington Monthly Magazine (2012).

Featured presentation on Personal Passport of Competencies, Gordon Commission meeting hosted by Arizona State University (2012).

George A. Miller Award (nominated), APA: General Psychology Division for 2010 article by Lee & Shute (2012).

Mack and Effie Campbell Tyner Endowed Professorship in Education (2012).

Featured article on Gates research grant (2011).

U.S. Patent #7,828,552 (Method and System for Designing Adaptive, Diagnostic Assessments), USPO (2010).

Featured article about stealth assessment research in the Chronicle of Higher Ed (2010).

NPR interview on Quest to Learn research funded by the MacArthur Foundation (2010).

Nomination for FSU teaching award, Florida State University (2009).

Family Market Initiative award, for contributions to the new consumer-market initiative, Educational Testing Service (2007).

Nugget award showcasing my research project called ACED supporting mathematics learning for sighted and visually disabled students, National Science Foundation (2006).

K-12 Solutions award for contributions to suite of assessment and reporting tools called "Product 2", Educational Testing Service (2003).

Star Team award for Excellence in Basic Research, awarded to one research project/team per year, awarded in 1999/1996/1993/1991, A.F. Office of Scientific Research, Washington, DC (1999).

Science & Technology award & induction, Women's Hall of Fame, San Antonio, TX (1998).

Science & Engineering award for "Significant contributions in exploratory and advanced technology development in support of the AF Mission", U.S. Air Force (1997).

Civilian of the Year award, directorate wide competition, one winner per year selected, awarded in 1996/1993/1992, U.S. Air Force (1996).

Scientific Excellence award, directorate wide competition, one winner per year selected, awarded to me twice--1996/1993, U.S. Air Force (1996).

Book of the Year award for Cognitive Approaches to Automated Instruction, Edited by J. Wesley Regian and Valerie J. Shute, DID (Division of Instructional Development of the AECT) (1995).

Best instructional innovation award for "Smithtown" program (Shute, Raghavan, Glaser, Schauble & Schultz), EDUCOM/IBM (1992).

Best social-sciences software award for "Smithtown" program (Shute, Raghavan, Glaser, Schauble & Schultz), EDUCOM/IBM (1992).

Civilian of the Quarter award, laboratory wide competition, one winner per quarter selected, U.S.

Air Force (1990).  
Chief Scientist award, U.S. Air Force (1989).  
Recipient of the "Sustained Superior" or "Sustained Excellent" performance awards each year of my 13-year tenure at the A.F. laboratory (1986-1999), U.S. Air Force (1986).  
Research Award, Central Research Fund, University of Pittsburgh (1985).  
Humanities Grant Research Award, University of California (1984).  
Graduate Opportunity Fellowship, University of California (1983).  
Sigma Xi Award, Grant in Aid of Research, University of California (1982).  
Regent's Award for Outstanding Research, University of California (1981).  
K.A. Seefield Award, "Outstanding Educator", University of California (1979).

### **Elected Fellow Status**

Elected as a Fellow of International Society for Design and Development in Education (2019).

### **Current Membership in Professional Organizations**

American Educational Research Association (AERA)  
Artificial Intelligence in Education (AIED)  
International Educational Data Mining Society (IEDMS)  
Technology, Instruction, Cognition, and Learning (TICL)

## **Teaching**

### **Courses Taught**

Application of Research Methods to Learning Design & Performance Technology (EME6064)  
Inquiry and Measurement for Practitioners (EDF5442)  
Modeling Persistence (EDF5906)  
Synthesis, Analysis, and Argumentation in Instructional Systems Research (EME6665)  
Analysis of Behavioral Rating Technology (EDF5906)  
Conducting Research on Task-based Learning (EDF5906)  
Practicum in Learning Research (EDG6363)  
Inquiry and Measurement in Instructional System Design (EME6635-06)  
Review of Games Supportig Prog (EDF5906)  
Directed Individual Study (EDF5906)  
Seminar in Advanced Instructional Systems Problems (EME6635)  
Assessment Seminar: Advanced Topics in Assessment (EDF6937-05)  
Seminar in Advanced Research Problems (EDF6937)  
Research Foundations: Literature Review (EME6635-02)  
Instructional Systems Research Colloquium (EME6635-05)  
Theories of Learning and Cognition in Instruction (EDP5216)  
Trends and Issues in Instructional Design (EME5608)

Experimental Psychology (Instructor, University of Texas, San Antonio, 1992-1993)  
Individual Differences in Learning (University of Pittsburgh, Pittsburgh, PA, 1985)  
Introductory Statistics (Instructor, Antioch University, Santa Barbara, CA, 1983-1984)  
Artificial Intelligence (TA, University of California, Santa Barbara, CA, 1982-1984)  
Advanced Statistics (TA, University of California, Santa Barbara, CA, 1981-1984)

### **New Course Development**

Application of Research Methods to Learning Design & Performance Technology (2019)  
Assessment for Practitioners (2017)  
Practicum in Learning Research (2015)  
Synthesis, Analysis, and Argumentation in Instructional Systems Research (2012)  
Assessment Seminar: Advanced Topics in Assessment (2010)  
Research Foundations: Literature Review (2009)  
Inquiry and Measurement in Instructional System Design (2008)

### **Doctoral Committee Chair**

Sun, C., graduate. (2021).  
Lu, X., graduate. (2021).  
Smith, G., graduate. (2021).  
Rahimi, S., graduate. (2020).  
Feulner, M., graduate. (2020).  
Huang, Y., graduate. (2018).  
Emihovich, B. W., graduate. (2017).  
Wang, L., graduate. (2017).  
Zhao, W., graduate. (2017).  
Moore, G. R., graduate. (2016). [EdS]  
Masduki, I., graduate. (2015).  
McGhee, M. L., graduate. (2015).  
Kim, Y. J., graduate. (2014).  
Dorn, R. L., graduate. (2014).  
Kim, A., graduate. (2010).  
Wang, Chen-yen, graduate. (2010). [EdS]  
Fulwilder, G. C., doctoral candidate.

### **Doctoral Committee Member**

Phillips, J., graduate. (2021).  
Dai, Z., graduate. (2020).  
Liu, Z., graduate. (2020).  
Carafano, P., graduate. (2019).  
Xu, X., graduate. (2017).

Lee, S., graduate. (2016).  
Saenz Moncaleano, C. C., graduate. (2016).  
Hand, K. G., graduate. (2015).  
Kim, H. Y., graduate. (2015).  
Wu, H., graduate. (2013). [measurement & stats]  
Barber, K. A., graduate. (2013).  
Lee, W. J., graduate. (2012).  
Novak, E., graduate. (2012).  
Sota, M., graduate. (2012).  
Hyun, O. J., graduate. (2012). [Visual Arts, Theatre, and Dance]  
Razzouk, R. G., graduate. (2011).  
Wieland, K. I., graduate. (2011).  
Sikorski, E., graduate. (2009).

### **Doctoral Committee University Representative**

Steinrücke, J., graduate. (2021).  
Arbulu, M., graduate. (2021).  
Agharazidermani, M., graduate. (2021).  
Harrell, E., graduate. (2019).  
Small, M. T., graduate. (2012). [computer science]  
Koh, K., graduate. (2011). [Information Sciences, FSU]  
Olumide, K. M., graduate. (2010). [Statistics Dept., FSU]  
O, J. H., graduate. (2010).  
Harwell, K., doctoral candidate.

### **Master's Committee Chair**

Baxter, S., graduate. (2021).  
Tate, D., graduate. (2021).  
Brown, A., graduate. (2020).  
Cunningham, A., graduate. (2020).  
Grubb, C., graduate. (2020).  
Howard, L., graduate. (2020).  
Princi, E., graduate. (2020).  
Rist, A., graduate. (2020).  
Thorpe, J., graduate. (2020).  
Troutman, R., graduate. (2020).  
Youngblood, C., graduate. (2020).  
Downing, J. C., graduate. (2018). [IS/online]  
Silvers, C., graduate. (2018).  
Screws, B. E., graduate. (2017). [IS/F2F]  
Bedgio, D., graduate. (2016). [IS/F2F]  
Blauer, D. D., graduate. (2016).

Davis, L., graduate. (2016). [IS/online]  
Steele, G. R., graduate. (2016). [IS/online]  
Weiss, M. K., graduate. (2016). [IS/online]  
Beauford, S. N., graduate. (2015). [IS/online]  
Donmez, O., graduate. (2015). [IS/F2F]  
Kim, J. R., graduate. (2015). [IS/F2F]  
Pasi, A., graduate. (2015). [IS/F2F]  
Taylor, B. H., graduate. (2015). [IS/online]  
Worley, S. C., graduate. (2015). [IS/online]  
Schatz, C., graduate. (2014). [IS/online]  
Long, C. M., graduate. (2014).  
Weaver, S., graduate. (2014). [IS/F2F]  
Surrency, M., graduate. (2014). [IS/online]  
Silverman, L. R., graduate. (2013). [PI/HRD]  
Brown, K. D., graduate. (2013). [IS/F2F]  
Collins, E. A., graduate. (2013). [IS/F2F]  
O'Donnell, L. A., graduate. (2013). [IS/F2F]  
Arnold, M. W., graduate. (2012). [PI/HRD/online]  
McGuire, C. J., graduate. (2012).  
Chen, W., graduate. (2012).  
Jackson, S. J., graduate. (2012). [IS/F2F]  
Halderman, D. E., graduate. (2011).  
Johnson, C. R., graduate. (2011).  
Ng, G. J., graduate. (2011). [MS/F2F]  
Henderson, J. C., graduate. (2011).  
McCann, C. J., graduate. (2011).  
Jacobs, A. H., graduate. (2010).  
Torres Luna, L. F., graduate. (2010).  
Wendel, C., graduate. (2010).  
Boulanger, J. D., graduate. (2010).  
Fong, K. W., graduate. (2009).  
Albrecht, L., graduate. (2009).  
Middleton, A. M., graduate. (2009).

### **Master's Committee Member**

Souders, D. J., graduate. (2013). [Psychology Dept]

### **Bachelor's Committee Member**

Bayles, M., graduate. (2017). *Malleability of measures of cognitive ability*. [Psychology Dept., Honors Thesis]  
Carroll, M., graduate. (2014). [Psychology Dept., Honors Thesis]  
Summer, A., graduate. (2014). [Psychology Dept., Honors Thesis]

Blocker, K., graduate. (2013). [Psychology Dept., Honors Thesis]  
Exum, A., student. [honor's thesis committee member]

### **Supervision of Student Research Not Related to Thesis or Dissertation**

Vutera, G. (2015–17).

## **Research and Original Creative Work**

### **Publications**

#### **Refereed Journal Articles**

Rahimi, S., Shute, V. J., & Almond, R. G. (in press). Stealth assessments in digital learning environments: Current trends, new directions, and ethical considerations. *Journal of Research on Technology in Education (JRTE)*, 19 pages.

Shute, V. J. (2026). For Bob — My Colleague, My Friend, My Hero. *The Journal of Writing Analytics, Vol. 8 (Special issue--Reflections on the Life of Robert J. Mislevy)*, 55-56. Retrieved from <https://wacclearinghouse.org/docs/jwa/vol8/mislevy.pdf>  
doi:<https://doi.org/10.37514/JWA-J.2025.8.1.06>

Rahimi, S., & Shute, V. J. (2024). Stealth assessment: A theoretically grounded and psychometrically sound method to assess, support, and investigate learning in technology-rich environments. *Educational Technology Research and Development*, 72(5), 2417-2441. Retrieved from <https://link.springer.com/article/10.1007/s11423-023-10232-1> doi:10.1007/s11423-023-10232-1

Bainbridge, K., Smith, G., Shute, V. J., & D'Mello, S. (2022). Designing and testing affective supports in an educational game. *International Journal of Game-Based Learning*, 12(1), 1-32. doi:10.4018/IJGBL.304434

Bainbridge, K., Shute, V. J., Rahimi, S., Liu, Z., Slater, S., Baker, R. S., & D'Mello, S. (2022). Does embedding learning supports enhance transfer during game-based learning? A case study with Physics Playground. *Learning and Instruction*, 77, 1-11. doi:<https://doi.org/10.1016/j.learninstruc.2021.101547>

Smith, G., Fulwider, G. C., Liu, Z., Lu, X., Li, J., & Shute, V. J. (2022). Examining students' perceived competence, gender, and ethnicity in a digital STEM learning game. *International Journal of Game-Based Learning*, 12(1), 1-17. doi:10.4018/ijgbl.294013

Yang, X., Rahimi, S., Fulwider, G. C., Smith, G., & Shute, V. J. (2022). Exploring students' behavioral patterns when playing educational games with learning supports at different

- timings. *Educational Technology Research and Development*, 1-31.  
doi:<https://doi.org/10.1007/s11423-022-10125-9>
- Rahimi, S., Shute, V. J., Fulwider, G. C., Bainbridge, K., Kuba, R., Yang, X., Smith, G., Baker, R. S., & D'Mello, S. K. (2022). Timing of learning supports in educational games can impact students' outcomes. *Computers & Education*, 190, 1-19.  
doi:<https://doi.org/10.1016/j.compedu.2022.104600>
- Rahimi, S., & Shute, V. J. (2021). First inspire, then instruct to improve students' creativity. *Computers & Education*, 174, 1-27. doi:<https://doi.org/10.1016/j.compedu.2021.104312>
- Rowe, E., Asbell-Clarke, J., Almeda, M. V., Gasca, S., Edwards, T., Bardar, E., Shute, V., & Ventura, M. (2021). Interactive Assessments of CT (IACT): Digital Interactive Logic Puzzles to Assess Computational Thinking in Grades 3–8. *International Journal of Computer Science Education in Schools*, 5(2), 28-73.  
doi:<https://doi.org/10.21585/ijcses.v5i1.149>
- Shute, V. J., & Rahimi, S. (2021). Stealth assessment of creativity in a physics educational game. *Computers in Human Behavior*, 116, 1-13. doi:<https://doi.org/10.1016/j.chb.2020.106647>
- Rahimi, S., Shute, V. J., & Zhang, Q. (2021). The effects of game and student characteristics on persistence in educational games: A hierarchical linear modeling approach. *International Journal of Technology in Education & Science*, 5(2), 141-165.  
doi:<https://doi.org/10.46328/ijtes.118>
- Yang, X., Rahimi, S., Shute, V. J., Kuba, R., Smith, G., & Alonso Fernández, C. (2021). The relationship among prior knowledge, accessing learning supports, learning outcomes, and game performance in educational games. *Educational Technology Research and Development*, 69, 1055-1075. doi:<https://doi.org/10.1007/s11423-021-09974-7>
- Sun, C., Shute, V. J., Stewart, A. E. B., Beck-White, Q., Reinhart, C. R., Duran, N., & D'Mello, S. (2021). The relationship between collaborative problem solving processes and objective outcomes in a game-based learning environment. *Computers in Human Behavior*, 128, 1-14.
- Rahimi, S., Shute, V. J., Kuba, R., Dai, C-P., Yang, X., Smith, G., Alonso Fernández, C., & Fulwider, G. (2021). The use and effects of incentive systems on learning and performance in educational games. *Computers & Education*, 165, 32.  
doi:<https://doi.org/10.1016/j.compedu.2021.104135>
- Kuba, R., Rahimi, S., Smith, G., Shute, V. J., & Dai, C-P. (2021). Using the first principles of instruction and multimedia learning principles to design and develop in-game learning support videos. *Educational Technology Research and Development*, 69, 1201-1220.  
doi:<https://doi.org/10.1007/s11423-021-09994-3>

- Sun, C., Shute, V. J., Stewart, A., Yonehiro, J., Duran, N., & D'Mello, S. (2020). A generalized competency model of collaborative problem solving. *Computers & Education, 143*, 1-17. doi:<https://doi.org/10.1016/j.compedu.2019.1>
- Shute, V. J., Rahimi S., Smith, G., Ke, F., Almond, R., Dai, C-P, Kamikabeya, R., Liu, Z., Yang, X., & Sun, C. (2020). Maximizing learning without sacrificing the fun: Stealth assessment, adaptivity, and learning supports in Physics Playground. *Journal of Computer-Assisted Learning, 37*, 127-141. doi:10.1111/jcal.12473
- Shute, V. J., Smith, G., Kamikabeya, R., Dai, C-P., Rahimi, S., Liu, Z., & Almond, R. G. (2020). The design, development, and testing of learning supports for the Physics Playground game. *International Journal of Artificial Intelligence in Education, 37*. doi:<https://doi.org/10.1007/s40593-020-00196-1>
- Zhao, W., & Shute, V. J. (2019). Can playing a video game foster computational thinking skills? *Computers & Education, 141*, 1-13. doi:<https://doi.org/10.1016/j.compedu.2019.1>
- Smith, G., Shute, V. J., & Muenzenberger, A. (2019). Designing and validating a stealth assessment for calculus competencies. *Journal for Applied Testing Technology, 20*(S1), 1-8.
- Spann, C., Shute, V. J., Rahimi, S., & D'Mello, S. (2019). The productive role of cognitive reappraisal to regulate frustration during game-based learning. *Computers in Human Behavior, 100*, 358-369. doi:<https://doi.org/10.1016/j.chb.2019.03.00>
- Shute, V. J., Sun, C., & Asbell-Clarke, J. (2017). Demystifying computational thinking. *Educational Research Review, 22*, 142-158. doi:<https://doi.org/10.1016/j.edurev.2017.09>
- Shute, V. J., & Rahimi, S. (2017). Review of computer-based assessment for learning in elementary and secondary education. *Journal of Computer-Assisted Learning, 33*, 1-19. doi:10.1111/jcal.12172
- Shute, V. J., Leighton, J. P., Jang, E. E., & Chu, M-W. (2016). Advances in the science of assessment. *Educational Assessment, 21*(1), 34-59.
- Kim, Y. J., Almond, R. G., & Shute, V. J. (2016). Applying Evidence-Centered Design for the development of game-based assessments in Physics Playground. *International Journal of Testing, 16*(2), 142-163. doi:10.1080/15305058.2015.1108322
- Shute, V. J., Wang, L., Greiff, S., Zhao, W., & Moore, G. (2016). Measuring problem solving skills via stealth assessment in an engaging video game. *Computers in Human Behavior, 63*, 106-117.

- Bosch, N., D'Mello, S. K., Ocumpaugh, J., Baker, R. S., & Shute, V. J. (2016). Using video to automatically detect learner affect in computer-enabled classrooms. *ACM Transactions on Interactive Intelligent Systems*, 6(2), 1-26. doi:http://dx.doi.org/10.1145/2946837
- Wang, L., Shute, V. J., & Moore, G. (2015). Lessons learned and best practices of stealth assessment. *International Journal of Gaming and Computer Mediated Simulations*, 74(4), 66-87. doi:DOI: 10.4018/IJGCMS.2015100104
- Shute, V. J., D'Mello, S. K., Baker, R., Bosch, N., Ocumpaugh, J., Ventura, M., & Almeda, V. (2015). Modeling how incoming knowledge, persistence, affective states, and in-game progress influence student learning from an educational game. *Computers & Education*, 86, 224-235.
- Kim, Y. J., & Shute, V. J. (2015). The interplay of game elements with psychometric qualities, learning, and enjoyment in game-based assessment. *Computers & Education*, 87, 340-356.
- Shute, V. J., Ventura, M., & Ke, F. (2015). The power of play: The effects of Portal 2 and Lumosity on cognitive and noncognitive skills. *Computers & Education*, 80, 58-67. doi:10.1016/j.compedu.2014.08.013
- Novak, E., Johnson, T. E., Tenebaum, G., & Shute, V. J. (2014). Effects of an instructional gaming characteristic on learning effectiveness, efficiency, and engagement: Using a storyline for teaching basic statistical skills. *Interactive Learning Environments*, 1-16.
- Almond, R. G., Kim, Y. J., Velasquez, G., & Shute, V. J. (2014). How task features impact evidence from assessments embedded in simulations and games. *Measurement: Interdisciplinary Research and Perspectives*, 12(1-2), 1-33. doi:10.1080/15366367.2014.910060
- Almond, R. G., Kim, Y. J., Velasquez, G., & Shute, V. J. (2014). Rejoinder to comments on task features in simulations and games. *Measurement: Interdisciplinary Research and Perspectives*, 12(3), 118-124. doi:10.1080/1536637.2014.939628
- Shute, V. J., Ventura, M., Wright, T., & Zhao, W. (2013). An investigation of the validity of the virtual spatial navigation assessment. *Frontiers in Psychology*, 4, 53-59. doi:10.3389/fpsyg.2013.00852
- Shute, V. J., Ventura, M., & Kim, Y. J. (2013). Assessment and learning of informal physics in Newton's Playground. *The Journal of Educational Research*, 106, 423-430.
- Shute, V. J., Ventura, M., & Torres, R. (2013). Formative evaluation of students at Quest to Learn. *International Journal of Learning and Media*, 4(1), 55-69.

- Dawkins, J. D., & Shute, V. J. (2013). Stars vs. clouds: Crafting creative collaborative commons. *International Journal of Designs for Learning, 4*(2), 15-29.
- Ventura, M., & Shute, V. J. (2013). The validity of a game-based assessment of persistence. *Computers and Human Behavior, 29*, 2568-2572.
- Ventura, M., Shute, V. J., & Zhao, W. (2012). The relationship between video game use and a performance-based measure of persistence. *Computers & Education, 60*, 52-58.
- Ventura, M., Shute, V. J., & Kim, Y. J. (2012). Video gameplay, personality and academic performance. *Computers & Education, 58*, 1260-1266.
- Razzouk, R., & Shute, V. J. (2012). What is design thinking and why is it important? *Review of Educational Research, 82*(3), 330-348.
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- Hansen, E. G., Shute, V. J., & Landau, S. (2010). An assessment-for-learning system in mathematics for individuals with visual disabilities. *Journal of Visual Impairment and Blindness, 104*(5), 275-286.
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## Presentations

### Invited Papers at Conferences

Almond, R. G., Shute, V. J., Rahimi, S., & Tingir, S. (presented 2018, October). *Identifying observable outcomes in game-based assessments*. Paper presented at Maryland Assessment Research Conference, University of Maryland, College Park, MD. (International)

Smith, G., Shute, V. J., & Muenzenberger, A. (presented 2018, February). *Game-based learning and its impact on the educational experience*. Paper presented at Transforming the Teaching and Learning Environment, 2018 Virtual Conference, University of Idaho, Moscow, ID. (International) Retrieved from <https://www.uidaho.edu/academics/dee/virtual-conference>

Shute, V. J. (presented 2014, October). *Stealth assessment in games*. Paper presented at Maryland Assessment Research Conference, University of Maryland, College Park, MD. (International)

Ke, F., Shute, V. J., Erlebacher, G., Clark, K., & Ventura, M. (presented 2014, June). *Earthquake Rebuild: Math learning through modeling and design*. Paper presented at Cyberlearning Summit, NSF, Madison, WI. (International)

Shute, V. J. (presented 2014, April). *Stealth assessment in Newton's Playground*. Paper presented at ISD @ FSU, FSU Alumni Association, Tallahassee, FL. (Local)

Shute, V. J. (presented 2013, May). *Issues and innovations in assessment*. Paper presented at Sesame Workshop and the Cooney Center, Cooney Center, New York, NY. (National)

Shute, V. J., & Ventura, M. (presented 2012, November). *Case study: Collecting and analyzing Bayesian net data*. Paper presented at the meeting of New York Conference on Educational Data Mining, Nov. 5-7, 2012, New York City, NY. (International)

Shute, V. J., & Ventura, M. (presented 2012, October). *Performance-based measures of persistence*. Paper presented at Engagement and Academic Tenacity: Making the Invisible Salient and Actionable, Bill & Melinda Gates Foundation, Cambridge, MA. (National)

- Shute, V. J. (presented 2012, October). *Personal passport of competencies*. Paper presented at Emerging Technologies Conference, Gordon Commission. (International)
- Shute, V. J. (presented 2012, July). *Stealth assessment in games*. Paper presented at Annual Meeting of the Psychometric Society, Psychometric Society, Lincoln, NE. (National)
- Shute, V. J. (presented 2012, June). *Analyzing learning via stealth assessment in games*. Paper presented at 8th Annual Games and Learning Society (GLS) conference, Games and Learning Society, Madison, WI. (National)
- Shute, V. J. (presented 2012, June). *Assessing learning in immersive environments*. Paper presented at Learning environments across disciplines (LEADS) conference, Learning environments across disciplines, Montreal, CA. (International)
- Shute, V. J. (presented 2008, August). *Games, stealth assessment, and learning*. Paper presented at the Annual meeting of the American Psychological Association (APA), American Psychological Association, Boston, MA. (International)
- Shute, V. J. (presented 2007, May). *Formative feedback and lifelong learning*. Paper presented at the annual meeting of the American Psychological Society (APS), American Psychological Society, Washington, DC. (International)
- Shute, V. J., Ventura, M., & Bauer, M. I. (presented 2007, May). *Melding the power of serious games and stealth assessments to foster learning: Flow and grow*. Paper presented at the Conference on Serious Games: Learning, Development and Change, USC Annenberg School for Communication, Los Angeles, CA. (International)
- Shute, V. J. (presented 1998, January). *An automated approach towards knowledge extraction, organization, and assessment*. Paper presented at Spring 1998 Seminar Series, Navy Center for Applied Research in Artificial Intelligence (NCARAI), Washington, DC. (National)
- Shute, V. J. (presented 1997, October). *Automating cognitive task analysis and diagnosis*. Paper presented at NATO conference (RSG-27) on Cognitive Task Analysis, NATO, Washington, DC. (International)
- Shute, V. J., & Gawlick, L. A. (presented 1997, October). *Practice effects and learner control in relation to learning*. Paper presented at Learning and Individual Differences conference, University of Minnesota, Minneapolis, MN. (National)
- Shute, V. J., & Gawlick, L. A. (presented 1996, October). *DNA: Automated cognitive task analysis program*. Paper presented at NATO Conference on Cognitive Diagnosis, NATO, Angers, France. (International)

- Shute, V. J. (presented 1996, October). *SMART: Empirical findings and implications*. Paper presented at Student Assessment and Cognitive Diagnosis Conference, CHI, MADD, ONR, Philadelphia, PA. (National)
- Shute, V. J. (presented 1995, May). *SMART paradigm and evaluation*. Paper presented at Artificial Intelligence in Education Workshop, Northwestern University, Institute for Learning Sciences, Evanston, IL. (State)
- Shute, V. J. (presented 1995, May). *SMART tutoring: Framework and findings*. Paper presented at Cognitive Science Colloquia Series, Georgia Institute of Technology, Atlanta, GA. (State)
- Shute, V. J. (presented 1993, August). *How to bullet-proof a tutor: Stat Lady hits the street!* Paper presented at the International Conference on Artificial Intelligence in Education (AIED '93), AIED, Edinburgh, Scotland. (International)
- Shute, V. J. (presented 1992, November). *Practice, performance, and learning: What's the deal?* Paper presented at University of Minnesota's Center for Research in Learning, Perception, & Cognition, University of Minnesota, Minneapolis, MN. (State)
- Shute, V. J. (presented 1992, October). *Modeling learner differences as a function of practice condition*. Paper presented at NATO Advanced Research Conference on: The Use of Computer Models for Explication, Analysis, and Experiential Learning, NATO, Gascony, France. (International)
- Shute, V. J. (presented 1991, December). *Building intelligent tutoring systems based on individual's incoming knowledge and skills*. Paper presented at Technology in Training and Education (TITE '91), TITE, Orlando, FL. (National)
- Shute, V. J., & Regian, J. W. (presented 1991, November). *Adaptivity in intelligent tutoring systems: Costs and benefits*. Paper presented at Conference on Intelligent Computer-Aided Training (ICAT '91), ICAT, Houston, TX. (National)
- Shute, V. J. (presented 1991). *Granularity of cognitive diagnosis: Evolution of resolution*. Paper presented at ONR-sponsored Cognitive Diagnosis Conference, Learning Research and Development Center, University of Pittsburgh, Pittsburgh, PA. (National)
- Shute, V. J. (presented 1988, October). *Smithtown: Teaching scientific inquiry skills*. Paper presented at Cognitive Science colloquium: University of California, University of California, Santa Barbara, CA. (State)
- Shute, V. J. (presented 1988, October). *The relationship between cognitive process measures and programming skill acquisition*. Paper presented at Cognitive Science colloquium: University of California, University of California, Santa Barbara, CA. (State)

Shute, V. J. (presented 1986, May). *Intelligence in a computer tutor*. Paper presented at Third Annual Conference on Computers and Writing, Conference on Computers and Writing, Pittsburgh, PA. (National)

Regian, J. W., Shute, V. J., & Pellegrino, J. W. (presented 1985, November). *Modifiability of spatial relations skills*. Paper presented at the annual meeting of the Psychonomic Society, Psychonomic Society, Boston, MA. (International)

Shute, V. J. (presented 1984, April). *Characteristics of cognitive cartography*. Paper presented at the Learning Research and Development Center, University of Pittsburgh, Pittsburgh, PA. (State)

### **Invited Papers at Symposia**

Shute, V. J., Ventura, M., & Kim, Y. J. (presented 2013). Stealth assessment in Newton's Playground to improve learning of physics. In *Sneak Peek symposium, Challenger Learning Center*. Symposium conducted at the meeting of Challenger Learning Center, Tallahassee, FL. (National)

Shute, V. J. (presented 2008, June). Visualizing and modeling changes in learner beliefs. In *Summer Research Symposium*. Symposium conducted at the meeting of Association for Educational Communications and Technology, Bloomington, IN. (International)

Shute, V. J. (presented 2005, February). Evidence is key. In *Symposium on Assessment*. Symposium conducted at the meeting of Advanced Distributed Learning (ADL), Arlington, VA. (National)

Gluck, K. A., & Shute, V. J. (presented 1996, May). Stat Lady meets ACT-R. In *First Annual Carnegie Mellon University Symposium on Technology Enhanced Learning*. Symposium conducted at the meeting of Carnegie Mellon University, Pittsburgh, PA. (National)

Shute, V. J. (presented 1991, March). Designing intelligent tutoring systems: All that glitters... In *Intelligent Tutoring Systems*. Symposium conducted at the meeting of University of Wisconsin, Madison, WI. (State)

Shute, V. J., & Regian, J. W. (presented 1990, June). Rose garden promises of intelligent tutoring systems: Blossom or thorn? In *Space Operations, Applications, and Research Symposium (SOAR '91)*. Symposium conducted at the meeting of Space Operations, Applications, and Research, Albuquerque, NM. (National)

Shute, V. J. (presented 1990, March). Principled approach to the evaluation of intelligent tutoring systems. In *AAAI Spring Symposium*. Symposium conducted at the meeting of American Association of Artificial Intelligence, Palo Alto, CA. (International)

Shute, V. J., & Kyllonen, P. C. (presented 1988, December). A taxonomy of learning skills: Basic and applied research. In *Cognitive Skills Assessment Workshop (CSAW '88)*. Symposium conducted at the meeting of Williams Air Force Base, Mesa, AZ. (National)

### Refereed Papers at Conferences

Sun, C., Shute, V. J., Stewart, A. E. B., & D'Mello, S. K. (presented 2025, March). *The Relationship between Collaborative Problem-Solving Skills and Group-to Individual Learning Transfer in a Game-based Learning Environment*. Paper presented at 15th International Conference on Learning Analytics and Knowledge, LAK25, Dublin, Ireland. (International)

Shute, V. J. (presented 2024, April). *Designing Games to Increase Diversity in STEM: Stealth assessment*. Paper presented at ISLT@50, Instructional Systems and Learning Technologies, Tallahassee, FL. (National)

Rahimi, S., Shute, V. J., Babae, M., & Esmaeilgoujar, S. (presented 2023, October). *A Systematic Review of Stealth Assessment Studies from 2004-2022*. Paper presented at Association for Educational Communications and Technology, AECT 2023, Orlando, FL USA. (International)

Stewart, A., Rao, A., Michaels, A., Sun, C., Shute, V. J., Duran, N., & D'Mello, S. K. (presented 2023). *CPSCoach: The Design and Implementation of Intelligent Collaborative Problem Solving Feedback*. Paper presented at Artificial Intelligence in Education, AIED 2023, Tokyo, Japan. (International)

Rahimi, S., Shute, V. J., & D'Mello, S. K. (presented 2023). *Is it better to provide embedded learning supports in educational games before or after attempting game levels?* Paper presented at American Educational Research Association, AERA, Chicago, IL. (International)

Rahimi, S., Shute, V. J., Khodabandelou, R., Kuba, R., Babae, M., & Esmaeeli, S. (presented 2023). *Stealth assessment: A systematic review of the literature*. Paper presented at International Society for the Learning Sciences, ISLS 2023, Montreal, Canada. (International)

Fulwider, G. C., Liu, Z., Smith, G., & Shute, V. J. (presented 2023). *Tackling wheel-spinning: The complex task of measuring persistence in learning games*. Paper presented at American Educational Research Association, AERA, Chicago, IL. (International)

Nolte, N., Rahimi, S., Shute, V. J., & Leutner, D. (presented 2022, December). *Evaluating a video game training for spatial skills in engineering studies*. Paper presented at GEBF, Society for Empirical Educational Research, Essen, Germany. (International)

- Slater, S., Baker, R., Shute, V. J., & Bowers, A. (presented 2022, June). *Engagement-based player typologies describe game-based learning outcomes*. Paper presented at Artificial Intelligence in Education, AIED, Durham, UK. (International)
- Rahimi, S., Fulwider, G. C., Jiang, S., & Shute, V. J. (presented 2022, June). *Predicting learning gains in an educational game using feature engineering and machine learning*. Paper presented at International Society for the Learning Sciences, ISLS, Hiroshima, Japan. (International)
- Sun, C., & Shute, V. J. (presented 2022, April). *The effects of learning supports on computational thinking during game play*. Paper presented at American Educational Research Association, AERA, San Diego, CA. (International)
- Smith, G., Shute, V. J., & Ke, F. (presented 2021, November). *Design matters: The impact of supports in a digital STEM learning game*. Paper presented at Association for Educational Communications & Technology, AECT, Chicago, IL. (International)
- Stewart, A. E. B., Michaels, A., Sun, C., Duran N. D., Shute, V. J., & D'Mello, S. K. (presented 2021, June). *Try encouraging your teammates: Designing an automated system to improve collaborative problem solving processes*. Paper presented at International Society of the Learning Sciences, (ISLS), Bochum, Germany (and virtual). (International)
- Smith, G., & Shute, V. J. (presented 2021, April). *Examining student use of learning supports in educational games*. Paper presented at American Educational Research Association, AERA, Virtual. (International)
- Rahimi, S., Shute, V. J., Kuba, R., Dai, C-P., Yang, X., Smith, G., & Alonso Fernández, C. (presented 2021, April). *Maximizing learning and performance using incentive systems in educational games*. Paper presented at American Educational Research Association, AERA, Virtual. (International)
- Shute, V. J., Rahimi, S., & Smith, G. (presented 2021, April). *Stealth assessment, adaptivity, and learning supports in educational games*. Paper presented at American Educational Research Association, AERA, Virtual. (International)
- Kuba, R., Shute, V. J., & Rahimi, S. (presented 2021, April). *Students' perceived competence, and extrinsic and intrinsic motivation in a physics educational game*. Paper presented at American Educational Research Association, AERA, Virtual. (International)
- Kuba, R., Smith, G., Shute, V. J., Dai, C-P., & Rahimi, S. (presented 2020, November). *Applying multimedia principles in the design and development of learning support videos in game-based learning*. Paper presented at Association for Educational Communications & Technology, AECT, Jacksonville, FL (Virtual). (International)
- Dai, C-P., Shute, V. J., Smith, G., Liu, Z., Kuba, R., & Rahimi, S. (presented 2020, November). *Fostering game-based physics learning through game design features*. Paper presented at

- Association for Educational Communications & Technology, AECT, Jacksonville, FL (Virtual). (International)
- Rahimi, S., & Shute, V. J. (presented 2020, November). *Maximizing learning and performance using incentive systems in educational games*. Paper presented at Florida Educational Research Association, FERA, Virtual. (National)
- Smith, G., Fulwider, C., Liu, Z., Li, J., Lu, X., Shute, V. J., & Rahimi, S. (presented 2020, November). *The impact of student perceived competence and gender on learning and performance in a physics-based learning game*. Paper presented at Association for Educational Communications & Technology, AECT, Jacksonville FL (Virtual). (International)
- Shute, V. J., Rahimi, S., & Almond, R. G. (presented 2020, April). *Stealth assessment and adaptive learning in Physics Playground*. Paper presented at American Educational Research Association, AERA--cancelled due to covid-19, San Francisco, CA. (International)
- Rahimi, S., Shute, V. J., & Zhang, Q. (presented 2020, April). *The effect of game difficulty and conceptual difficulty on student persistence in a learning game: A hierarchical linear modeling approach*. Paper presented at American Educational Research Association, AERA--cancelled due to covid-19, San Francisco, CA. (International)
- Baker, R. S., Shute, V. J., Karumbaiah, S., & Barany, A. (presented 2020, January). *Predicting if a student will quit a level in Physics Playground*. Paper presented at Annual IES PI meeting, Department of Education, Washington, DC. (National)
- Rahimi, S., & Shute, V. J. (presented 2020, January). *The architecture of an adaptive learning game—Physics Playground*. Paper presented at Annual IES PI meeting, Department of Education, Washington, DC. (National)
- Stewart, A. E. B., Brzakova, H., Sun, C., Yonehiro, J., Stone, C., Duran, N., Shute, V. J., & D'Mello, S. K. (presented 2019, November). *I say, you say, we say: Using spoken language to model socio-cognitive processes during computer-supported collaborative problem solving*. Paper presented at CSCW 2019, 22nd ACM Conference on Computer-Supported Cooperative Work and Social Computing, Austin, TX. (International)
- Rahimi, S., Shute, V. J., & Zhang, Q. (presented 2019, November). *The effects of game difficulty and conceptual difficulty on students' persistence in a learning game*. Paper presented at Florida Educational Research Association, FERA, St. Petersburg, FL. (Regional)
- Rahimi, S., & Shute, V. J. (presented 2019, October). *The architecture of Physics Playground—A learning game with stealth assessment and adaptive content*. Paper presented at Education Technology and Computational Psychometrics Symposium, ACT, Iowa City, IA. (International)

- D'Mello, S. K., Stewart, A., Amon, M., Sun, C., Duran, N., & Shute, V. J. (presented 2019, July). *Towards dynamic intelligent support for collaborative problem solving*. Paper presented at AIED2019, Artificial Intelligence in Education, Chicago, IL. (International)
- Rahimi, S., Shute, V. J., & Almond, R. G. (presented 2019, June). *The technical underpinning of Physics Playground*. Paper presented at International Association for Computerized Adaptive Testing, IACAT, Minneapolis, MN. (International)
- Rahimi, S., & Shute, V. J. (presented 2019, May). *Game-based assessment and support of creativity*. Paper presented at International Creativity Conference at Southern Oregon University, ICCSOU, Ashland, OR. (International)
- Baker, R. S., D'Mello, S. K., Kai, S., Bosch, P. N., Ocumpaugh, J., & Shute, V. J. (presented 2019, April). *Affect detection in Physics Playground*. Paper presented at American Educational Research Association, AERA, Toronto, Canada. (International)
- Smith, G., Shute, V. J., Lui, Z., Rahimi, S., & Lu, X. (presented 2019, April). *Building a better playground: Three usability studies and two tests*. Paper presented at American Educational Research Association, AERA, Toronto, Canada. (International)
- Ke, F., Shute, V. J., Smith, G., & Liu, Z. (presented 2019, April). *Creating and refining in-game learning supports for conceptual physics understanding*. Paper presented at American Educational Research Association, AERA, Toronto, Canada. (International)
- Liu, Z., Shute, V. J., Smith, G., & Ke, F. (presented 2019, April). *Designing game-based learning experiences: Game level design and testing in Physics Playground*. Paper presented at American Educational Research Association, AERA, Toronto, Canada. (International)
- Tingir, S., Almond, R. G., & Shute, V. J. (presented 2019, April). *Examining student persistence when playing an online game called Physics Playground: A survival analysis*. Paper presented at American Educational Research Association, AERA, Toronto, Canada. (International)
- Shute, V. J. (presented 2019, April). *Physics Playground: History and Overview*. Paper presented at American Educational Research Association, AERA, Toronto, Canada. (International)
- Shute, V. J., Rahimi, S., Lu, X., & Smith, G. (presented 2019, April). *Supporting learning in educational games: Promises and challenges*. Paper presented at American Educational Research Association, AERA, Toronto, Canada. (International)
- Rahimi, S., Almond, R. G., & Shute, V. J. (presented 2019, April). *Technical underpinnings of Physics Playground*. Paper presented at American Educational Research Association, AERA, Toronto, Canada. (International)

- Smith, G., Shute, V. J., & Muenzenberger, A. (presented 2019, March). *Designing and validating a stealth assessment for Calculus competencies*. Paper presented at Marvalene Hughes Research in Education Conference, Florida State University, Tallahassee, FL. (Regional)
- Rahimi, S., Shute, V. J., & Almond, R. G. (presented 2019, March). *Technical underpinnings of Physics Playground*. Paper presented at Council on Research in Education (CORE) Conference, College of Education, FSU, Tallahassee, FL. (Local)
- Karumbaiah, S. C., Barany, A., Baker, R. S., & Shute, V. J. (presented 2019). *Using Epistemic Networks with automated codes to understand why players quit levels in a learning game*. Paper presented at ICQE 2019, International Conference on Quantitative Ethnography, Madison, WI. (International)
- Smith, G., Shute, V. J., Liu, Z., Rahimi, S., & Lu, X. (presented 2018, November). *Building a better playground: Three usability studies and two tests*. Paper presented at Florida Educational Research Association, FERA, St. Petersburg, FL. (Regional)
- Liu, L., Smith, G., Shute, V. J., Ke, F., Lu, X., Rahimi, S., & Sun, C. (presented 2018, November). *Designing game-based learning experiences: Game level design and testing in Physics Playground*. Paper presented at Florida Educational Research Association, FERA, St. Petersburg, FL. (Regional)
- Rahimi, S., & Shute, V. J. (presented 2018, November). *How to include learning supports in learning games without sacrificing the fun: A review of the literature*. Paper presented at Florida Educational Research Association, FERA, St. Petersburg, FL. (Regional)
- Almond, R. G., Shute, V. J., Tingir, S., & Liu, Z. (presented 2018, November). *Identifying observable outcomes in game-based assessments*. Paper presented at Florida Educational Research Association, FERA, St. Petersburg, FL. (Regional)
- Ke, F., Shute, V. J., Smith, G., Liu, Z., Rahimi, S., Lu, X., Sun, C., & Kuba, R. (presented 2018, November). *Impact of in-game support on learning: A pilot test for Physics Playground*. Paper presented at Florida Educational Research Association, FERA, St. Petersburg, FL. (Regional)
- Shute, V. J. (presented 2018, November). *Physics Playground: History and overview*. Paper presented at Florida Educational Research Association, FERA, St. Petersburg, FL. (Regional)
- Rahimi, S., Shute, V. J., & Almond, R. G. (presented 2018, November). *Technical underpinnings of Physics Playground*. Paper presented at Florida Educational Research Association, FERA, St. Petersburg, FL. (Regional)
- Karumbaiah, S., Rahimi, S., Baker, R., Shute, V. J., & D'Mello, S. (presented 2018, February). *Is student frustration in learning games more associated with game mechanics or*

- conceptual understanding?* Paper presented at International Conference on Learning Sciences, ICLS, London, UK. (International)
- Smith, G., Shute, V. J., Muenzenberger, A., & Carruthers, S. (presented 2018). *Designing and validating a stealth assessment for Calculus competencies*. Paper presented at AECT, Association for Educational Communications and Technology, Kansas City, MO. (International)
- Karumbaiah, S., Baker, R. S., & Shute, V. J. (presented 2018). *Predicting quitting in students playing a learning game*. Paper presented at Educational Data Mining 2018, EDM, Buffalo, NY. (International)
- Shute, V. J., Ke, F., Almond, R., Sun, C., Rahimi, S., & Lu, X. (presented 2018). *Promoting formal knowledge and skills acquisition in Physics Playground*. Paper presented at American Educational Research Association, AERA, NYC, NY. (International)
- Yalcin, Y., & Shute, V. J. (presented 2017, November). *Effects of different types of feedback on problem solving*. Paper presented at Association for Educational Communications and Technology, AECT, Jacksonville, FL. (International)
- Smith, G., Shute, V. J., & Muenzenberger, A. (presented 2017, November). *How game-based learning is impacting the educational experience*. Paper presented at OLC-Accelerate 2017, Online Learning Consortium, Orlando, FL. (International)
- Slater, S., Bowers, A., Kai, S., & Shute, V. J. (presented 2017, July). *A typology of players in the game Physics Playground*. Paper presented at Digital Games Research Association conference, DiGRA, Melbourne, Australia. (International)
- Shute, V. J. (presented 2017, April). *Assessment of problem solving skills in Plants vs. Zombies 2*. Paper presented at American Educational Research Association, AERA, San Antonio, TX. (International)
- Rahimi, S., & Shute, V. J. (presented 2017, April). *Designing the class as a game to promote active learning in K-12 education*. Paper presented at Council on Research in Education (CORE) Conference, College of Education, FSU, Tallahassee, FL. (Local)
- Ke, F., Xu, X., Lee, S., Moon, J., Dai, Z., Pan, Y., Shute, V. J., Clark, K., & Erlebacher, G. (presented 2017, April). *Math learning through game-based architectural design and building*. Paper presented at American Educational Research Association, AERA, San Antonio, TX. (International)
- Ke, F., Xu, X., Lee, S., Moon, J., Dai, Z., Pan, Y., Shute, V. J., Clark, K., & Erlebacher, G. (presented 2017, April). *Math learning through game-based architectural design and building*. Paper presented at Council on Research in Education (CORE) Conference, COE, FSU, Tallahassee, FL. (Local)

- Rahimi, S., & Shute, V. J. (presented 2016, October). *Designing the class as a game to promote active learning in K-12 education: A literature review*. Paper presented at Association for Educational Communications and Technology, AECT, Las Vegas, NV. (International)
- Malkiewich, L., Baker, R. S., Shute, V. J., Kai, S., & Paquette, L. (presented 2016, June). *Classifying behavior to elucidate elegant problem solving in an educational game*. Paper presented at The 9th International Conference on Educational Data Mining, EDM, Raleigh, NC. (International)
- D'Mello, S. K., Bosch, N., Kai, S., Paquette, L., Baker, R., Ocumpaugh, J., & Shute, V. J. (presented 2016, April). *Automatic objective measurement of student emotions in computer-enabled classrooms*. Paper presented at American Educational Research Association, AERA, Washington, DC. (International)
- Ke, F., Shute, V. J., Clark, K., Erlebacher, G., Lee, S., Faizian, P., Smith, D., Moore, G., & Xu, X. (presented 2016, April). *Interweaving learning game design and game-based learning assessment: A design experiment*. Paper presented at American Educational Research Association, AERA, Washington, DC. (International)
- Shute, V. J., & Zapata-Rivera, D. (presented 2016, April). *Representing and visualizing beliefs*. Paper presented at National Council on Measurement in Education, NCME, Washington, DC. (International)
- Shute, V. J. (presented 2016, April). *Stealth assessment*. Paper presented at American Educational Research Association, Cognition and Assessment SIG, AERA, Washington, DC. (International)
- Shute, V. J. (presented 2016). *Using log-file data as evidence of problem solving skill in technology-rich environments*. Paper presented at American Educational Research Association, AERA, San Antonio, TX. (International)
- Kai, S., Paquette, L., Baker, R., Bosch, N., D'Mello, S., Ocumpaugh, J., Shute, V. J., & Ventura, M. (presented 2015). *A comparison of face-based and interaction-based affect detectors in Physics Playground*. Paper presented at 8th International Conference on Educational Data Mining, EDM, Madrid, Spain. (International)
- Bosch, N., Chen, H., D'Mello, S., Baker, R., & Shute, V. J. (presented 2015). *Accuracy vs. availability heuristic in multimodal affect detection in the wild*. Paper presented at 17th International Conference on Multimodal Interaction, ICMI, Seattle, WA. (International)
- Andres, J. M. L., Rodrigo, M. M., Baker, R., Paquette, L., Shute, V., & Ventura, M. (presented 2015). *Analyzing student action sequences and affect while playing Physics Playground*. Paper presented at International Workshop on Affect, Meta-Affect, Data and Learning, AMADL, Madrid, Spain. (International)

- Bosch, N., D'Mello, S., Baker, R., Ocumpaugh, J., Shute, V. J., Ventura, M., Wang, L., & Zhao, W. (presented 2015). *Automatic detection of learning-centered affective states in the wild*. Paper presented at Proceedings of the 2015 International Conference on Intelligent User Interfaces, IUI, New York, NY: ACM. (International)
- Ke, F., & Shute, V. J. (presented 2015). *Design of intrinsic integration of math learning in a 3D architecture game*. Paper presented at AERA, AERA, Chicago, IL. (International)
- D'Mello, S. K., Bosch, N., Baker, R., Ocumpaugh, J., Shute, V. J., Ventura, M., Wang, L., & Zhao, W. (presented 2015). *Facial features for automatic detection of student affect with Newton's Playground in the wild*. Paper presented at AERA, AERA, Chicago, IL. (International)
- Shute, V. J., & Boot, W. (presented 2015). *Games, learning, and assessment*. Paper presented at APA, APA, Toronto, Canada: American Psychological Association. (International)
- Shute, V. J., Moore, G. R., & Wang, L. (presented 2015). *Measuring problem solving skills in Plants vs. Zombies 2*. Paper presented at 8th International Conference on Educational Data Mining, EDM, Madrid, Spain. (International)
- Zhao, W., Shute, V. J., & Wang, L. (presented 2015). *Stealth assessment of problem-solving skills from gameplay*. Paper presented at Interservice/Industry Training, Simulation and Education Conference, IITSEC 2015, Orlando, FL. (International)
- Bosch, N., D'Mello, S., Baker, R., Ocumpaugh, J., & Shute, V. J. (presented 2015). *Temporal generalizability of face-based affect detection in noisy classroom environments*. Paper presented at 17th International Conference on Artificial Intelligence in Education, AIED, Madrid, Spain. (International)
- Rodrigo, M. M., Andres, J. M. L., Sugay, J. O., Baker, R., Paquette, L., Shute, V. J., Ventura, M., & Small, M. (presented 2014). *An exploratory analysis of confusion among students using Newton's Playground*. Paper presented at International Conference on Computers in Education, (ICCE), Nara, Japan. (International)
- Kim, Y. J., Almond, R. G., Shute, V. J., & Ventura, M. (presented 2014). *Constructing Bayesian networks for a stealth assessment of qualitative physics*. Paper presented at National Council on Measurement in Education, (NCME), Philadelphia, PA. (International)
- Ke, F., Shute, V. J., Erlebacher, G., Clark, K., & Ventura, M. (presented 2014). *Earthquake Rebuild: Math learning through modeling and design*. Paper presented at Cyberlearning Summit, Center for Innovative Research in Cyberlearning, Madison, WI. (International)
- Wang, L., & Shute, V. J. (presented 2014). *Gaming the system in Newton's Playground*. Paper presented at American Educational Research Association, (AERA), Philadelphia, PA. (International)

- Kim, Y. J., & Shute, V. J. (presented 2014). *How do game design decisions influence psychometric qualities, learning, and enjoyment in game-based assessment?* Paper presented at International Conference of Educational Technology, (ICET), Seoul, South Korea. (International)
- Ke, F., Shute, V. J., Erlebacher, G., Clark, K., & Ventura, M. (presented 2014). *Mathematics learning via game-based architectural design practice.* Paper presented at Annual Meeting of the Association for Educational Communications and Technology, (AECT), Jacksonville, FL. (International)
- Kim, Y. J., & Shute, V. J. (presented 2014). *Search for the optimal balance among learning, psychometric qualities, and enjoyment in game-based assessment.* Paper presented at American Educational Research Association, (AERA), Philadelphia, PA. (International)
- Wang, L., Kim, Y. J., & Shute, V. J. (presented 2013). *"Gaming the system" in Newton's Playground.* Paper presented at Artificial Intelligence and Education, (AIED), Memphis, TN. (International)
- Shute, V. J., & Gozotuk, A. (presented 2013). *Affective processes, persistence, & learning in Newton's Playground.* Paper presented at Learning Environments Across Disciplines, (LEADS), San Francisco, CA. (International)
- Shute, V. J., Ventura, M., & Small, M. (presented 2013). *Analyzing performance data in Newton's Playground.* Paper presented at NCME, National Council on Measurement in Education, San Francisco, CA. (International)
- Ventura, M., Shute, V. J., & Kim, Y. J. (presented 2013). *Assessment and learning of informal physics in Newton's Playground.* Paper presented at Artificial Intelligence in Education, (AIED), Memphis, TN. (International)
- Wang, L., & Shute, V. J. (presented 2013). *Can playing video games improve cognitive flexibility?* Paper presented at Annual Meeting of the Association for Educational Communications and Technology, (AECT), Anaheim, CA. (International)
- Almond, R. G., Kim, Y. J., Shute, V. J., & Ventura, M. (presented 2013). *Debugging the evidence chain.* Paper presented at Uncertainty in Artificial Intelligence, (UAI), Bellvue, WA. (International)
- Shute, V. J., Ventura, M., & Kim, Y. J. (presented 2013). *Games, stealth assessment, and validity.* Paper presented at National Council on Measurement in Education, (NCME), San Francisco, CA. (International)
- Shute, V. J., Kim, Y. J., & Wang, L. (presented 2013). *Make your own levels in Newton's Playground.* Paper presented at Artificial Intelligence in Education, (AIED), Memphis, TN. (International)

- Shute, V. J., & Wang, L. (presented 2013). *Measuring problem solving skills in Portal 2*. Paper presented at Cognition and Exploratory Learning in Digital Age, (CELDA), Ft. Worth, TX. (International)
- Shute, V. J., & Ventura, M. (presented 2013). *Problem solving and spatial orientation in Portal 2*. Paper presented at National Council on Measurement in Education, (NCME), San Francisco, CA. (International)
- Shute, V. J., & Ke, F. (presented 2012, October). *Games, learning, and assessment*. Paper presented at Association for Educational Communications and Technology, (AECT), Louisville, KY. (International)
- Almond, R. G., Kim, Y. J., Velasquez, G., & Shute, V. J. (presented 2012, July). *How task features impact evidence from assessments embedded in simulations and games*. Paper presented at Annual Meeting of the Psychometric Society ( IMPS 2012), July 9-12, 2012, Psychometric Society, Lincoln, NE. (National)
- Kim, Y. J., Shute, V. J., Ventura, M., & Almond, R. G. (presented 2012, June). *Newton's Playground: When the science of assessment development meets the art of game design*. Paper presented at 8th Annual Games and Learning Society (GLS) conference, Games and Learning Society, Madison, WI. (National)
- Shute, V. J., Kim, Y. J., & Ventura, M. (presented 2012, April). *Assessing creativity, persistence, and conceptual physics from Crayon Physics Deluxe*. Paper presented at Co-chair, co-discussant, and presentation at the National Council on Measurement in Education (NCME), National Council on Measurement in Education, Vancouver, BC, Canada. (National)
- Shute, V. J. (presented 2012, April). *Assessing systems thinking skills of students at Quest to Learn*. Paper presented at AERA, Vancouver, BC: American Educational Research Association, American Educational Research Association, Vancouver, BC, Canada. (National)
- Shute, V. J., Ventura, M., & Kim, Y. J. (presented 2012, April). *Developing and evaluating stealth assessments for 21st Century competencies*. Paper presented at Paper presented at NCME, Vancouver, BC: National Council on Measurement in Education, Vancouver, BC: National Council, Vancouver, BC, Canada. (National)
- Shute, V. J., Ventura, M., & Kim, Y. J. (presented 2012, April). *Stealth assessments for measuring creativity, persistence, and physics understanding in Crayon Physics Deluxe*. Paper presented at AERA, Vancouver, BC: American Educational Research Association, American Educational Research Association, Vancouver, BC, Canada. (International)
- Almond, R. G., Shute, V. J., Ventura, M., & Kim, Y. J. (presented 2012, March). *When the science of assessment development meets the art of game design*. Paper presented at

Fourth Annual Marvalene Hughes Research in Education Conference, Marvalene Hughes Research in Education, Tallahassee, FL. (National)

Almond, R. G., & Shute, V. J. (presented 2011, May). *ACED: An example of using Bayesian networks for cognitive diagnosis*. Paper presented at Paper presented at APS, American Psychological Society, Washington, D.C. (National)

Kim, Y. J., & Shute, V. J. (presented 2011, April). *Does playing the World of Goo facilitate learning?* Paper presented at Annual meeting of the American Educational Research Association, (AERA), New Orleans, LA. (International)

Kim, A., Shute, V. J., & Spector, J. M. (presented 2011, April). *Effects of initial mental model construction on mental model development, performance, intrinsic motivation, and metacognition in a task-centered learning environment*. Paper presented at American Educational Research Association, (AERA), New Orleans, LA. (International)

Shute, V. J. (presented 2011, April). *Examples of learning from computer games*. Paper presented at American Educational Research Association, (AERA), New Orleans, LA. (International)

Shute, V. J. (presented 2011, March). *Assessment of 21st century skills at Q2L*. Paper presented at Digital Media & Learning, (DML), Long Beach, CA. (International)

Shute, V. J. (presented 2011, March). *Assessment of students at Quest to Learn*. Paper presented at Panel discussion at the DML conference, Digital Media and Learning, Long Beach, CA. (National)

Shute, V. J. (presented 2011, March). *Assessment of students at Quest to Learn*. Paper presented at Panel discussion at the DML conference, Digital Media and Learning, Long Beach, CA. (National)

Dawkins, J., & Shute, V. J. (presented 2011, March). *Introducing non-digital social gathering into Instructional Systems learning spaces*. Paper presented at Paper presented at the IDEC Conference, Interior Design Educators Council, Denver, CO. (National)

Torres, R., & Shute, V. J. (presented 2010, June). *Early research and remixed theories pointing to learning as mediated by nodal ecologies: Findings from studies of Gamestar Mechanic and Quest to learn*. Paper presented at the ICLS conference, International Conference of the Learning Sciences, Chicago, IL. (International)

Dawkins, J., Shute, V. J., Reiser, R., & Baylor, A. L. (presented 2010, June). *Introducing non-digital social gatherings into Instructional Systems learning spaces*. Paper presented at Academic Learning Spaces: Invention, (Re)Invention and Innovation Conference, Florida State University, Tallahassee, FL. (Local)

- Torres, R., Shute, V. J., & Shapiro, A. (presented 2010, June). *The design and assessment of Quest to Learn, a new games-based school in New York City*. Paper presented at the GLS conference, Games & Learning Society, Madison, WI. (International)
- Shute, V. J. (presented 2010, April). *Assessing Quest to Learn*. Paper presented at AERA, American Educational Research Association, Denver, CO. (International)
- Shute, V. J., Torres, R., & Davis, B. S. (presented 2010, February). *Assessing Quest 2 Learn: A Worked Example*. Paper presented at the DML conference, Digital Media and Learning, San Diego, CA. (International)
- Jeong, A. C., & Shute, V. J. (presented 2009, October). *Visually Comparing and Assessing Changes in Students' Concept Maps: New Software Tools and Methods*. Paper presented at the AECT conference, Association for Educational Communications and Technology, Louisville, KY. (International)
- Shute, V. J., Levy, R., Baker, R., Zapata, D., & Beck, J. (presented 2009, July). *Assessment and learning in intelligent educational systems: A peek into the future*. Paper presented at the AIED '09 Workshop on Intelligent Educational Games, Artificial Intelligence in Education, Brighton, UK. (International)
- Almond, R. G., & Shute, V. J. (presented 2009, April). *Calibration of Bayesian network-based diagnostic assessment*. Paper presented at AERA, American Educational Research Association, San Diego, CA. (International)
- Shute, V. J., Masduki, I., Donmez, O., Dennen, V., Kim, Y. J., Jeong, A., & Wang, C-Y. (presented 2009, April). *Modeling and diagnosing 21st century knowledge and skills*. Paper presented at the 2009 Marvalene Hughes Research in Education Conference, College of Education, FSU, Tallahassee, FL. (Local)
- Shute, V. J., Donmez, O., Kim, Y. J., Dennen, V., Jeong, A., & Wang, C-Y. (presented 2009, April). *Modeling and diagnosing 21st century knowledge skills within game environments*. Paper presented at AERA, American Educational Research Association, San Diego, CA. (International)
- Jeong, A. C., & Shute, V. J. (presented 2009, April). *Superimposing individual and group causal maps to trigger critical discourse and changes in learners' causal models*. Paper presented at AERA, American Educational Research Association, San Diego, CA. (International)
- Shute, V. J., Jeong, A., & Zapata-Rivera, D. (presented 2008, March). *Assessing mental models and discourse patterns with evidence-based flexible belief networks*. Paper presented at AERA, American Educational Research Association, New York City, NY. (International)

- Zapata-Rivera, D., Hansen, E. G., & Shute, V. J. (presented 2007, July). *English ABLE*. Paper presented at the International AIED conference, Artificial Intelligence in Education, Los Angeles, CA. (International)
- Shute, V. J., Hansen, E. G., & Almond, R. G. (presented 2007, July). *Evaluating ACED: The impact of feedback and adaptivity on learning*. Paper presented at the International AIED conference, Artificial Intelligence in Education, Los Angeles, CA. (International)
- Shute, V. J., Hansen, E. G., & Almond, R. G. (presented 2007, April). *Evaluation of ACED: Adaptive content with evidence-based diagnosis*. Paper presented at Annual meeting of the National Council on Measurement in Education (NCME), American Association for Educational Research, Chicago, IL. (International)
- Hansen, E. G., & Shute, V. J. (presented 2007, April). *Towards accessible educational products: The usability of an assessment-for-learning system in mathematics for individuals with visual disabilities*. Paper presented at Annual meeting of the National Council on Measurement in Education (NCME), American Educational Research Association, Chicago, IL. (International)
- Almond, R. G., Shute, V. J., Underwood, J. S., & Zapata-Rivera, D. (presented 2006, July). *Bayesian networks: A teacher's view*. Paper presented at The Fourth Bayesian Modeling Applications Conference, Uncertainty in Artificial Intelligence, Cambridge, MA. (International)
- Shute, V. J. (presented 2006, April). *Assessments for learning: Great idea, but do they work?* Paper presented at AERA, American Educational Research Association, San Francisco, CA. (International)
- Hansen, E. G., Landau, S., Shute, V. J., & Graf, E. A. (presented 2005, April). *Audio-tactile graphics in an adaptive delivery system for math tests and instruction*. Paper presented at the GAMA Summit: Goals for Achieving Math Accessibility, National Federation of the Blind (NFB) Jernigan Institute, Baltimore, MD. (National)
- Shute, V. J., & Underwood, J. S. (presented 2005, April). *Diagnostic assessment in math problem in solving evidence is key*. Paper presented at AERA, American Educational Research Association, Montreal, Canada. (International)
- Shute, V. J. (presented 2005, April). *The role of instructional design in simulated and inductive learning environments: Synthesis of three experimental studies*. Paper presented at AERA, American Educational Research Association, Montreal, Canada. (International)
- Shute, V. J., & Hansen, E. G. (presented 2004, April). *Diagnostic, adaptive e-learning for visually disabled learners*. Paper presented at AERA, American Educational Research Association, San Diego, CA. (International)

- Shute, V. J. (presented 2003, April). *Adaptive e-learning*. Paper presented at AERA, American Educational Research Association, Chicago, IL. (International)
- Shute, V. J. (presented 2003, April). *Under the hood of adaptive e-learning: Diagnostic assessment, student modeling, and selection rules*. Paper presented at AERA, American Educational Research Association, Chicago, IL. (International)
- Shute, V. J. (presented 2002, June). *Automating ECD-based diagnostic assessments*. Paper presented at Workshop 11 at the International ITS 2002 Conference, Intelligent Tutoring Systems, San Sebastian, Spain & Biarritz, France. (International)
- Shute, V. J., & Graf, E. A. (presented 2002, June). *Creating valid diagnostic assessments*. Paper presented at Workshop 11 at the International ITS 2002 Conference, Intelligent Tutoring Systems, Biarritz, France. (International)
- Shute, V. J. (presented 2002, June). *Learning during instruction*. Paper presented at APS, American Psychological Society, New Orleans, LA. (International)
- Shute, V. J., & Lajoie, S. P. (presented 2000, August). *DNA: What? How? Why?* Paper presented at APA, American Psychological Association, Washington, D.C. (International)
- Gluck, K. A., Shute, V. J., Anderson, J. R., & Lovett, M. C. (presented 1998, August). *Deconstructing a computer-based tutor: Striving for better learning efficiency in Stat Lady*. Paper presented at the 4th International ITS '98 conference, Intelligent Tutoring Systems, San Antonio, TX. (International)
- Shute, V. J., Torreano, L. A., & Willis, R. E. (presented 1998, August). *DNA - Uncorking the bottleneck in knowledge elicitation and organization*. Paper presented at the 4th International ITS '98 conference, Intelligent Tutoring Systems, San Antonio, TX. (International)
- Shute, V. J. (presented 1997, November). *Creating an adaptive training system: Integration of the SMART student model in a RIDES tutor*. Paper presented at AAAI: Authoring Tools for Intelligent Tutoring System, Association for the Advancement of Artificial Intelligence, Cambridge, MA. (National)
- Shute, V. J. (presented 1997, June). *The effects of practice and learner control on outcome, efficiency, and retention*. Paper presented at the Alamo Chapter for the Human Factors and Ergonomics Society, Human Factors and Ergonomics Society, San Antonio, TX. (State)
- Shute, V. J., Sugrue, B., & Willis, R. (presented 1997, March). *Automated cognitive task analysis procedure*. Paper presented at AERA, American Educational Research Association, Chicago, IL. (International)

- Sugrue, B., & Shute, V. J. (presented 1997, March). *Development of a comprehensive taxonomy of item attributes*. Paper presented at AERA, American Educational Research Association, Chicago, IL. (International)
- Shute, V. J., & Sugrue, B. (presented 1997, March). *Task analysis and assessment for student modeling in experimental learning environments*. Paper presented at AERA, American Educational Research Association, Chicago, IL. (International)
- Shute, V. J., & Gawlick, L. A. (presented 1996, July). *Practice effects and learner control on learning outcome, efficiency, and retention*. Paper presented at the Cognitive Science Society conference, Cognitive Science Society, San Diego, CA. (International)
- Shute, V. J., & Catrambone, R. (presented 1996, July). *Unified vs. tailored analogies: effects on conceptual knowledge acquisition*. Paper presented at ICLS '96, International Conference of the Learning Sciences, Evanston/Chicago, IL. (International)
- Shute, V. J., Gawlick, L. A., & Regian, J. W. (presented 1996, April). *Learner-controlled practice: Effects on acquisition and retention*. Paper presented at the SIOP '96 conference, Society for Industrial and Organizational Psychology, San Diego, CA. (National)
- Shute, V. J. (presented 1995, August). *SMART evaluation: Cognitive diagnosis, mastery learning, and remediation*. Paper presented at the International AIED '95 conference, Artificial Intelligence in Education, Washington, D.C. (International)
- Shute, V. J., & Gluck, K. A. (presented 1995, April). *Artifacts of learning: The Stat Lady experience*. Paper presented at AERA, American Educational Research Association, San Francisco, CA. (International)
- Shute, V. J., & Gluck, K. A. (presented 1995, April). *How useful are personality and learning style measures as determinants of learning?* Paper presented at AERA, American Educational Research Association, San Francisco, CA. (International)
- Regian, J. W., & Shute, V. J. (presented 1994, October). *Embedded on-line assessment for intelligent tutoring systems: Implications for test design*. Paper presented at the 36th Annual Conference of IMAT, International Military Testing Association, Rotterdam, The Netherlands. (International)
- Kyllonen, P. C., & Shute, V. J. (presented 1994, April). *Are there aptitude-treatment interactions?* Paper presented at AERA, American Educational Research Association, New Orleans, LA. (International)
- Shute, V. J. (presented 1994, April). *Learners, environments, and a confirmatory test of ATI*. Paper presented at AERA, American Educational Research Association, New Orleans, LA. (International)

- Shute, V. J., & Gawlick-Grendell, L. A. (presented 1994, April). *Practice effects on skill acquisition, outcome, and retention*. Paper presented at AERA, American Educational Research Association, New Orleans, LA. (International)
- Shute, V. J., & Gawlick-Grendell, L. A. (presented 1993, August). *An experiential approach to teaching and learning probability: Stat Lady*. Paper presented at the International Conference on AIED '93, Artificial Intelligence in Education, Edinburgh, Scotland. (International)
- Shute, V. J., & Gawlick-Grendell, L. A. (presented 1993, April). *An experiential system for learning probability: Stat Lady*. Paper presented at AERA, American Educational Research Association, Atlanta, GA. (International)
- Regian, J. W., & Shute, V. J. (presented 1993, April). *An investigation of virtual reality for training visual-spatial tasks*. Paper presented at AERA, American Educational Research Association, Atlanta, GA. (International)
- Shute, V. J. (presented 1991, October). *How to build more intelligent tutoring systems*. Paper presented at the 33rd Annual conference of the MTA, Military Testing Association, San Antonio, TX. (National)
- Shute, V. J. (presented 1991, April). *Learning from interactive learning environments: Supportive vs. thwartive behaviors*. Paper presented at AERA, American Educational Research Association, Chicago, IL. (International)
- Shute, V. J. (presented 1990, July). *Aptitude-treatment interactions and cognitive skill diagnosis*. Paper presented at the Cognitive Skills Acquisition Workshop (CSAW '90), Air Force Human Resources Laboratory, San Antonio, TX. (National)
- Regian, J. W., & Shute, V. J. (presented 1990, June). *Intelligent tutoring systems: Breaking the price barrier*. Paper presented at the SOAR '90 conference, Space Operations, Applications and Research, Albuquerque, NM. (National)
- Shute, V. J. (presented 1990, April). *A comparison of inductive and deductive learning environments: Which is better for whom and why?* Paper presented at AERA, American Educational Research Association, Boston, MA. (International)
- Shute, V. J., Woltz, D. J., & Regian, J. W. (presented 1989, May). *An investigation of learner differences in an its environment: There's no such thing as a free lunch*. Paper presented at the 4th International AIED Conference, Artificial Intelligence in Education, Amsterdam, Holland. (International)
- Shute, V. J. (presented 1989, May). *Blackboard architectures in intelligent tutoring systems*. Paper presented at 4th International Conference on AIED, Artificial Intelligence in Education, Amsterdam, Holland. (International)

- Pena, C. M., & Shute, V. J. (presented 1989, April). *Programming skill acquisition*. Paper presented at the SWPA Conference, Southwest Psychological Association, Houston, TX. (Regional)
- Shute, V. J. (presented 1989, March). *Evaluation of intelligent tutoring systems*. Paper presented at AERA, American Educational Research Association, San Francisco, CA. (International)
- Shute, V. J. (presented 1989, March). *Individual differences in learning from an intelligent tutoring system*. Paper presented at AERA, American Educational Research Association, San Francisco, CA. (International)
- Regian, J. W., Dennis, M. M., & Shute, V. J. (presented 1989, March). *INFLITE: An intelligent instrument flight trainer with computer-generated speech*. Paper presented at the TITE '89 Conference, Technology in Training Equipment, Atlanta, GA. (National)
- Shute, V. J. (presented 1989, March). *Intelligent tutoring systems as learning criteria*. Paper presented at AERA, American Educational Research Association, San Francisco, CA. (International)
- Shute, V. J. (presented 1989, March). *Learning abilities and intelligent tutoring systems*. Paper presented at the TITE '89 Conference, Technology in Training Equipment, Atlanta, GA. (National)
- Shute, V. J., & Glasser, R. (presented 1988, April). *Engendering scientific behavior*. Paper presented at AERA, American Educational Research Association, New Orleans, LA. (International)
- Woltz, D. J., & Shute, V. J. (presented 1988, April). *Research on aptitudes for procedural skill acquisition*. Paper presented at AERA, American Educational Research Association, New Orleans, LA. (International)
- Regian, J. W., & Shute, V. J. (presented 1988, March). *Artificial intelligence in training: The evolution of intelligent tutoring systems*. Paper presented at the TITE '88 Conference, Technology in Training Equipment, Biloxi, MI. (National)
- Shute, V. J. (presented 1988, February). *Teaching scientific inquiry skills: Smithtown*. Paper presented at the Third Annual USICON Conference, User-Interface Conference, Austin, TX. (International)
- Shute, V. J. (presented 1987, August). *Intelligent tutoring systems as tools for investigating individual differences in learning*. Paper presented at the SOAR Conference, Space Operations, Automation, and Robotics, Houston, TX. (National)

- Shute, V. J., & Raghavan, K. (presented 1987, May). *Tools in discovery worlds*. Paper presented at the Third International Conference on AIED, Artificial Intelligence in Education, Pittsburgh, PA. (International)
- Shute, V. J., & Bonar, J. G. (presented 1986, August). *Intelligent tutoring systems for scientific inquiry skills*. Paper presented at the Cognitive Science Society conference, Cognitive Science Society, Amherst, MA. (International)
- Shute, V. J., Glaser, R., & Resnick, P. J. (presented 1986, April). *Discovering and learning to discover: An intelligent microworld for economics*. Paper presented at AERA, American Educational Research Association, San Francisco, CA. (International)
- Shute, V. J. (presented 1985, August). *Structures and processes of large-scale spatial knowledge*. Paper presented at APA, American Psychological Association, Los Angeles, CA. (International)
- Lajoie, S. P., & Shute, V. J. (presented 1985, August). *Two intelligent tutors: Principles of instructional design*. Paper presented at APA, American Psychological Association, Los Angeles, CA. (International)
- Shute, V. J., & Resnick, P. J. (presented 1985, July). *The economics tutor: A bite-sized architecture*. Paper presented at the Conference on Bite-Sized Architectures, Learning Research and Development Center, Pittsburgh, PA. (State)
- Shute, V. J. (presented 1985, March). *Computer applications in economics*. Paper presented at the EEA Conference, Eastern Economic Association, Pittsburgh, PA. (Regional)
- Shute, V. J., Pellegrino, J. W., Hubert, L., & Reynolds, R. W. (presented 1982, April). *The relationship between testosterone levels and human spatial abilities*. Paper presented at the WPA Conference, Western Psychological Association, Sacramento, CA. (Regional)
- Pellegrino, J. W., Shute, V. J., & Solter, A. (presented 1981, November). *Speed, accuracy and strategy differences in spatial processing*. Paper presented at the annual meeting of the Psychonomic Society, Psychonomic Society, Philadelphia, PA. (International)

### **Nonrefereed Papers at Conferences**

- Shute, V. J. (presented 2007, June). *Merging Games and Stealth Assessment to Foster Learning*. Paper presented at the ETS R&D Brown Bag series, Educational Testing Service, Princeton, NJ. (State)
- Shute, V. J., Hansen, E. G., & Underwood, J. S. (presented 2006, February). *Review of research on parental involvement and students' academic achievement*. Paper presented at ETS meeting, Educational Testing Service, Princeton, NJ. (State)

- Shute, V. J. (presented 2005, October). *Evidence-centered evaluation*. Paper presented at ETS Center for Assessment Innovation and Technology Transfer Brown Bag, Educational Testing Service, Princeton, NJ. (State)
- Fife, J., & Shute, V. J. (presented 2005, September). *Mathematics Intervention Module (MIM)*. Paper presented at ETS Center for Assessment Innovation and Technology Transfer Brown Bag, Educational Testing Service, Princeton, NJ. (State)
- Shute, V. J. (presented 2003, December). *Product Innovation: Pieces of PI*. Paper presented at the Assessment Development Division, Educational Testing Service, Princeton, NJ. (State)
- von Davier, A. A., Graf, E. A., & Shute, V. J. (presented 2003, January). *IRT models for investing training effects*. Paper presented at the MCMC Journal Club, Educational Testing Service, Princeton, NJ. (State)
- Shute, V. J. (presented 2002, February). *Adaptive e-learning*. Paper presented at Thomas Edison State college Roundtable, Educational Testing Service, Princeton, NJ. (State)
- Shute, V. J., & Willis, R. E. (presented 1998, September). *Efficiently surfing the internet to obtain medical data*. Paper presented at the Bexar County Medical Managers' Association Meeting, Bexar County, San Antonio, TX. (State)
- Shute, V. J. (presented 1998, April). *Story about my research, in AF Times and Leading Edge magazines*. Paper presented at feature articles by Rudy Purifacto, Brooks Air Force Base, San Antonio, TX. (State)
- Shute, V. J. (presented 1995, July). *Student modeling for adaptive and responsive tutoring*. Paper presented at the AFOSR SIT-STILL '95 Workshop, Air Force, Brooks AFB, TX. (State)
- Shute, V. J. (presented 1994, February). *CLASS laboratory research*. Paper presented at the TAPSTEM Meeting, TAPSTEM, San Antonio, TX. (State)
- Shute, V. J. (presented 1993, January). *Past, current, and future research in the CLASS Laboratory*. Paper presented at the TAPSTEM Meeting, TAPSTEM, San Antonio, TX. (State)
- Shute, V. J. (presented 1990, November). *Doing science is totally cool!* Paper presented at fifth grade students (Redland Oaks Elementary School), Lackland Air Force Base, Lackland AFB, TX. (State)
- Shute, V. J. (presented 1989, December). *Complex Learning Assessment (Class): Programming skill acquisition*. Paper presented at the Air Force Office of Scientific Research (AFOSR) Annual Review, AFOSR, Dayton, OH. (National)

### **Nonrefereed Papers at Symposia**

Shute, V. J. (presented 2014). Problem solving in Plants vs. Zombies 2. In COE (Chair), *FSU COE Fall Symposium*. Symposium conducted at the meeting of FSU, Tallahassee, FL. (Regional)

### **Invited Keynote and Plenary Presentations at Conferences**

Shute, V. J. (presented 2024, November). *Stealth assessment in serious games*. Keynote presentation at Joint Conference on Serious Games, JCSG 2024, Brooklyn, NY. (International)

Shute, V. J. (presented 2024, February). *Stealth Assessment in Games to Measure and Support Learning*. Keynote presentation at Michigan Assessment Consortium, Assessment Learning Network (ALN), virtual/online. (International)

Shute, V. J. (presented 2023, May). *Stealth Assessment in Games to Measure and Support Learning*. Keynote presentation at CITERS 2023, Center for Information Technology in Education, Hong Kong. (International)

Shute, V. J. (presented 2022, October). *The future of stealth assessment*. Keynote presentation at Personalized Adventures in Learning (PAL): The Future of AI and Education, NSF Convergence Accelerator Program, virtual/online. (National)

Shute, V. J. (presented 2021, November). *Shute's fruits: Four decades of research (1981 - 2021)*. Keynote presentation at ASKe conference, Florida State University, College of Education, virtual/online. (International) Retrieved from <https://www.youtube.com/watch?v=u2088uH5y98>

Shute, V. J. (presented 2021, July). *Stealth assessment: What, why, and how?* Keynote presentation at International Conference on Advanced Learning Technologies (ICALT), ICALT2021, virtual/online. (International) Retrieved from <https://tc.computer.org/tclt/icalt2021/>

Shute, V. J. (presented 2021, June). *Stealth assessment to measure and support learning*. Keynote presentation at Technology and Measurement Around the Globe, TMAG, Virtual. (International)

Shute, V. J. (presented 2021, January). *Stealth Assessment*. Keynote presentation at Iranian Association of Educational Technology, IAET, Iran (virtual). (International)

Shute, V. J. (presented 2020, March). *Stealth assessment to measure and support learning*. Keynote presentation at Inaugural talk at the Achievement and Assessment Institute Biannual Lecture Series, University of Kansas, Lawrence, KS. (Regional)

- Shute, V. J. (presented 2019, November). *Stealth Assessment*. Keynote presentation at RHUMBO project--Networking training week, European Commission, Pisa, Italy. (International)
- Shute, V. J. (presented 2019, November). *Stealth assessment: What, why, and how*. Keynote presentation at Annual Distributed Doctorate Conference, Learning Technologies Dept, University of North Texas, New Orleans, LA. (Regional)
- Shute, V. J. (presented 2019, October). *Stealth assessment to support learning*. Keynote presentation at Technology, Mind, & Society, American Psychological Association, Washington, DC. (International)
- Shute, V. J. (presented 2019, August). *Stealth assessment in games to support learning*. Keynote presentation at Third Global Summit of AI and Big Data in Education in Beijing, Beijing Normal University, Beijing, China. (International)
- Shute, V. J. (presented 2019, April). *Stealth assessment in games*. Keynote presentation at CMU (Pier Group), Carnegie-Mellon University, Pittsburgh, PA. (International)
- Shute, V. J. (presented 2018, July). *What is Stealth Assessment?* Keynote presentation at VECTOR, Universitat Turbingen, Tubingen, Germany. (International)
- Shute, V. J. (presented 2018, April). *Stealth assessment*. Keynote presentation at Florida Assessment Leadership Gathering, Curriculum Associates, Miami, FL. (State)
- Shute, V. J. (presented 2017, November). *Stealth assessment: What, why, and how?* Keynote presentation at Joint Conference on Serious Games (JCSG 2017), Institute of Research and Innovation in Bioengineering (I3B) of the Polytechnic University of Valencia, Valencia, Spain. (International)
- Shute, V. J. (presented 2017, October). *Stealth Assessment*. Keynote presentation at CREATE conference, Consortium for Research on Educational Assessment and Teaching Effectiveness, Virginia Beach, VA. (International)
- Shute, V. J. (presented 2017, July). *What is stealth assessment?* Keynote presentation at World Conference on Computers in Education (WCCE 2017), International Federation for Information Processing, Dublin, Ireland. (International)
- Shute, V. J. (presented 2017, June). *Stealth assessment*. Keynote presentation at SCASS 2017, Council of Chief State School Officers (CCSSO), Austin, TX. (National)
- Shute, V. J. (presented 2016, September). *Webinar: Assessment in games*. Keynote presentation at Teaching and Learning with Technology, NYU, New York City, NY. (Local)

- Shute, V. J. (presented 2016, August). *Stealth assessment*. Plenary presentation at Revolutionary Learning 2016, Excelsior College, NYC, NY. (International) Retrieved from <http://www.revolutionarylearning.org/>
- Shute, V. J. (presented 2016, May). *Stealth assessment in video games*. Keynote presentation at Methods Bootcamp, Aarhus University in Denmark, Copenhagen, Denmark. (International)
- Shute, V. J. (presented 2015). *Assessment in Games – An introduction to stealth assessment*. Keynote presentation at UNESCO event: Gaming Challenge—Learning & Assessment, UNESCO, Mumbai, India. (International)
- Shute, V. J. (presented 2015). *Game-based stealth assessment: Opportunities and challenges*. Plenary presentation at ACT, ACT, Iowa City, IA. (International)
- Shute, V. J. (presented 2015). *Stealth assessment in games*. Keynote presentation at 8th Annual Meeting of the Canada and United States Security Simulation Technologies Group, U.S. Department of State, Washington, DC. (International)
- Shute, V. J. (presented 2015). *Stealth assessment in video games*. Keynote presentation at Research Conference of the Australian Council for Educational Research, ACER, Southbank, Melbourne. (International)
- Shute, V. J. (presented 2015). *Stealth assessment: Why, What, & How*. Keynote presentation at Dean's Distinguished Lecture at Harvard Graduate School of Education, Harvard Graduate School of Education, Cambridge, MA. (International)
- Shute, V. J. (presented 2014). *Stealth assessment in games: Using model-based tools to assess understanding and provide the basis for learning support*. Keynote presentation at National Council on Measurement in Education, (NCME), Philadelphia, PA. (International)
- Shute, V. J. (presented 2014). *Stealth assessment in games: Why, what, & how*. Keynote presentation at Educational Data Mining, (EDM), Memphis, TN. (International)
- Shute, V. J. (presented 2014). *Stealth assessment to support military training*. Plenary presentation at Interservice/Industry Training, Simulation and Education Conference, (I/ITSEC), Orlando, FL. (International)
- Shute, V. J. (presented 2013). *Formative feedback*. Plenary presentation at Artificial Intelligence in Education, (AIED), Memphis, TN. (International)
- Shute, V. J. (presented 2012, November). *Stealth assessment*. Plenary presentation at Florida Educational Research Association, (FERA), Gainesville, FL. (National)

- Shute, V. J. (presented 2012, May). *My career in science*. Keynote presentation at 2012 Florida DOE for Florida students, grades 6-12, FLDOE, webinar. (Regional)
- Shute, V. J. (presented 2010, October). *Assessment and learning: A vision (webinar)*. Keynote presentation at Next Generation Learning Challenges, EDUCAUSE, Seattle, WA. (International)
- Shute, V. J. (presented 2010, June). *Assessing Quest to Learn*. Keynote presentation at NPR: All Things Considered. Interviewed by Heather Chaplin, National Public Radio, NYC, NY. (International)
- Shute, V. J. (presented 2009, December). *ECD and games*. Plenary presentation at Evidence-based Competency Assessment, Advanced Distributed Learning (ADL), Alexandria, VA. (National)
- Shute, V. J. (presented 2009, March). *Adaptive Technologies*. Keynote presentation at the Conference on Adaptive Training Technologies, Army Research Institute, Charleston, SC. (National)
- Shute, V. J. (presented 2008, November). *Evaluation of an assessment for learning program in mathematics*. Plenary presentation at the International Conference on Joining Educational Mathematics (JEM), Joining Educational Mathematics, Paris, France. (International)
- Shute, V. J. (presented 2008, June). *Visualizing and modeling changes in learner beliefs*. Keynote presentation at Association for Educational Communications and Technology (AECT) summer research program, Association for Educational Communications and Technology (AECT), Bloomington, IN. (International)
- Shute, V. J. (presented 2007, November). *Dx and Rx: A new generation of assessments*. Keynote presentation at Florida Educational Research Association (FERA) Conference, Florida Educational Research Association, Tampa, FL. (Regional)
- Shute, V. J., & Zapata-Rivera, J. D. (presented 2005, November). *Tools to support e-learning*. Keynote presentation at eLearning Summit, University of Memphis, Memphis, TN. (National)
- Shute, V. J. (presented 2005, October). *Tensions, trends, tools, and technologies: Time for an educational sea change*. Keynote presentation at ETS Invitational Conference—The Future of Assessment: Shaping Teaching and Learning conference, Columbia University, NYC, NY. (National)
- Shute, V. J. (presented 2004, June). *Designing adaptive diagnostic math assessments for sighted and visually disabled students*. Plenary presentation at Information Technology in Education, University of Nebraska, Lincoln, NE. (National)

- Shute, V. J. (presented 1998, August). *My knowledge of knowledge*. Keynote presentation at 4th International Intelligent Tutoring System conference, International Intelligent Tutoring System, San Antonio, TX. (International)
- Shute, V. J. (presented 1998, April). *Featured guest on a 30-minute TV show*. Keynote presentation at Role Models in San Antonio, Commentator: Nick Calzoncit, San Antonio, TX. (State)
- Shute, V. J. (presented 1998, April). *We've come a long way, Barbie!* Keynote presentation at "Expanding Your Horizons" conference, UTSA, Youth Alliance, San Antonio, TX. (National)
- Shute, V. J. (presented 1997, August). *Automating cognitive task analysis and diagnosis: Explicate and evaluate*. Keynote presentation at Artificial Intelligence in Education (AIED '97) conference, Artificial Intelligence in Education, Kobe, Japan. (International)
- Shute, V. J. (presented 1997, May). *The design and evaluation of automated cognitive task analysis and diagnostic tools*. Keynote presentation at Midwest Artificial Intelligence and Cognitive Science (MAICS) conference, Midwest Artificial Intelligence and Cognitive Science, Dayton, OH. (Regional)
- Shute, V. J. (presented 1994, August). *Student modeling: Boosting the IQ of a computer tutor*. Keynote presentation at Instructional Technology Summer Institute, Utah State University, Logan, UT. (National)
- Shute, V. J. (presented 1994, June). *SMART: Student Modeling Approach for Responsive Tutoring*. Keynote presentation at World Conference on Educational Multimedia and Hypermedia--ED-MEDIA '94, ED-MEDIA, Vancouver, Canada. (International)

### **Invited Presentations at Conferences**

- Shute, V. J. (presented 2021, June). *Stealth assessment and learning supports in games (Panel: Research-based Digital-first Assessments and the Future of Education)*. Presentation at Artificial Intelligence in Education, AIED 2021, Utrecht, Netherlands. (International)
- Shute, V. J. (presented 2018, January). *Exploring adaptive cognitive and affective learning support for next-generation STEM learning games*. Presentation at IES Principal Investigators Conference, IES, DOE, Arlington, VA. (National) Retrieved from <https://ies.ed.gov/pimeeting/>
- Shute, V. J. (presented 2018, January). *How I became a game designer/researcher*. Presentation at ED Games Expo 2018, IES, DOE, John F. Kennedy Center for the Performing Arts, Washington, DC. (National) Retrieved from <https://ies.ed.gov/sbir/EdGamesExpo.asp>

- Shute, V. J. (presented 2016, May). *Overview of stealth assessment*. Presentation at Houghton Mifflin Harcourt Roundtable--Webinar, Houghton Mifflin Harcourt, Boston, MA. (Regional)
- Shute, V. J., Lester, J., Pekrun, R., Gozutok, A., & Smith, A. (presented 2014, May). *Affective states and learning in Newton's Playground*. Presentation at Learning Environments Across Disciplines, (LEADS), Montreal, Quebec Canada. (International)
- Shute, V. J. (presented 2012, November). *Invited address to the Florida Educational Research Association (FERA) 2012*. Presentation at Florida Educational Research Association (FERA) 2012, (FERA), Gainesville, FL. (National)
- Shute, V. J. (presented 2012, May). *My career in science*. Presentation at 2012 Florida Department of Education for Florida students, grades 6-12, 2012 Florida Department of Education. (National)
- Shute, V. J. (presented 2012, April). *What is stealth assessment?* Presentation at Invited webinar address delivered at the Utah State University, Utah State University, Salt Lake City, UT. (National)
- Shute, V. J. (presented 2011, December). *Assessment in the 21st Century*. Presentation at Assessment Panel (with J. Gee, R. Mislevy, D. Shaffer) at the National Academy of Education's Adaptive Educational Technologies Summit, National Academy of Education's Adaptive Educational Technologies, Washington, DC. (National)
- Shute, V. J., Ventura, M., Almond, R. G., Kim, Y. J., & Wang, L. (presented 2011, December). *Building evidence-based stealth assessments in videogames*. Presentation at Workshop at the second annual FCR-STEM Conference, FCR-STEM, Destin, FL. (National)
- Shute, V. J. (presented 2011, September). *Stealth assessment*. Presentation at Invited international webinar address for the Transforming Assessment webinar series, Teaching and Educational Development Institute, The University of Queensland, Australia, Queensland, Australia 4072. (International)
- Shute, V. J. (presented 2011, September). *Stealth assessment of 21st Century competencies*. Presentation at "Sneak Peek" event hosted by FSU for the Tallahassee business community, Florida State University, Tallahassee, FL. (National)
- Shute, V. J. (presented 2011, June). *Games, learning, and assessment*. Presentation at workshop for Tracking Engagement and Learning in Transmedia: The Challenge of Designing Analytics for Complex Educational Media Properties, Complex Educational Media Properties, New York City, NY. (National)
- Shute, V. J. (presented 2011, June). *What is stealth assessment?* Presentation at Games for Change Festival, Games for change (G4C), New York City, NY. (National)

- Shute, V. J. (presented 2011, May). *Evidence-based stealth assessment*. Presentation at Technology-enhanced assessment Seminar, Educational Testing Service, Princeton, NJ. (National)
- Shute, V. J. (presented 2011, January). *Stealth assessment in games to support learning*. Presentation at Games and Learning Conference, Center for Advanced Technology, Los Angeles, CA. (National)
- Shute, V. J. (presented 2011, January). *Visions of assessment and constraint with design*. Presentation at Games, Assessment and Learning Workshop, hosted jointly by the Gates Foundation, the MacArthur Foundation, and the Game Innovation Lab, Los Angeles, CA. (National)
- Shute, V. J. (presented 2010, August). *Adaptive technologies to support learning*. Presentation at Adaptive Learning Design, Teachers College, Columbia University, New York, NY. (International)
- Shute, V. J. (presented 2010, May). *Using ECD to Assess Q2L*. Presentation at Workshop on Theories and Models: The secrets about the path from philosophy of science to real research, Florida State University, Tallahassee, FL. (International)
- Shute, V. J. (presented 2010, May). *Worked Example: Quest to Learn*. Presentation at MacArthur Foundation meeting, Arizona State University, Phoenix, AZ. (National)
- Shute, V. J., & Kim, Y. J. (presented 2010, May). *Worked Example: The World of Goo*. Presentation at MacArthur Foundation meeting, Arizona State University, Phoenix, AZ. (National)
- Shute, V. J. (presented 2009, November). *Assessing Quest to Learn*. Presentation at MacArthur Foundation meeting at Arizona State University, MacArthur Foundation, Phoenix, AZ. (National)
- Shute, V. J. (presented 2009, October). *Assessing and supporting learning with immersive games*. Presentation at the Celebration of the Life and Career of Robert M. Morgan Conference, Instructional Systems Program, Florida State University, Tallahassee, FL. (National)
- Shute, V. J. (presented 2009, October). *Stealth assessment*. Presentation at the National Academy of Sciences Learning Science: Gaming, Simulation, and Education Workshop, National Academy of Sciences, Washington, D.C. (National)
- Shute, V. J. (presented 2009, July). *Rich media and scholarly research: Games and stealth assessment*. Presentation at the Future of New Media Research and Scholarly Publishing forum, Webcast produced by the MIT Press and Monterey Institute for Technology and Education, Webcast on the world-wide-web. (National)

- Kim, Y. J., & Shute, V. J. (presented 2009, May). *Creative Problem Solving at Media Village in Quest Atlantis*. Presentation at MacArthur Foundation meeting at Arizona State University, MacArthur Foundation, Phoenix, AZ. (National)
- Shute, V. J. (presented 2009, May). *Embedding assessment and support of 21st century skills within Quest Atlantis*. Presentation at the Games for Change (G4C) Festival, Games for Change, New York City, NY. (International)
- Shute, V. J., Levy, R., Baker, R., Zapata, D., & Beck, J. (presented 2009, May). *Intelligent educational systems with embedded assessment to support learning: A peek into the future*. Presentation at the MacArthur Foundation meeting at Arizona State University, MacArthur Foundation, Phoenix, AZ. (National)
- Shute, V. J. (presented 2009, May). *Stealth assessment in Taiga Park*. Presentation at MacArthur Foundation meeting at Arizona State University, MacArthur Foundation, Phoenix, AZ. (National)
- Shute, V. J. (presented 2009, April). *Instructional Science*. Presentation at "Journal Talks," American Educational Research Association (AERA) conference, American Educational Research Association, San Diego, CA. (International)
- Shute, V. J. (presented 2008, November). *21st century assessment to promote 21st century learning: The benefits of blinking*. Presentation at the MacArthur Foundation group meeting, Arizona State University, Phoenix, AZ. (National)
- Shute, V. J. (presented 2008, May). *Flexible belief networks*. Presentation at the MacArthur Foundation group meeting, Arizona State University, Phoenix, AZ. (National)
- Shute, V. J. (presented 2008, March). *Instructional Science*. Presentation at "Journal Talks," American Educational Research Association (AERA) conference, American Educational Research Association, New York City, NY. (International)
- Shute, V. J. (presented 2007, September). *Combining serious games and embedded assessment*. Presentation at the International Center for Learning, Education and Performance Systems (ICLEPS) workshop, International Center for Learning, Tallahassee, FL. (International)
- Shute, V. J., & Zapata-Rivera, D. (presented 2006, October). *Modeling flexible belief networks: Blessed are the flexible, for they shall not get bent out of shape*. Presentation at Center for Assessment Innovation and Technology Transfer Brown Bag series, Educational Testing Service, Princeton, NJ. (Local)
- Spector, J. M., Merrill, M. D., Merrienboer, J., Driscoll, M., Shute, V. J., Jonassen, D., & Gibbons, A. (presented 2006, October). *Update on the third edition of the Handbook of Research on Educational Communications and Technology*. Presentation at Association

- for Educational Communications and Technology (AECT) conference, Association for Educational Communications and Technology, Dallas, TX. (International)
- Shute, V. J., & Zapata-Rivera, D. (presented 2006, September). *Modeling and using flexible belief networks*. Presentation at Center for Complex Learning and the Application of Knowledge workshop, National Center for Supercomputing Applications (NCSA), University of Illinois, Urbana-Champaign, IL. (International)
- Shute, V. J. (presented 2006, February). *Tools and technologies: Toward a Greenlandic Sea Change*. Presentation at ETS-Greenland Colloquium, Educational Testing Service, Princeton, NJ. (State)
- Shute, V. J., Hansen, E. G., & Graf, E. A. (presented 2005, December). *ACED: Adaptive Content with Evidence-based Diagnosis*. Poster presentation at National Science Foundation (NSF) grantees meeting, National Science Foundation, Arlington, VA. (National)
- Graesser, A., & Shute, V. J. (presented 2005, October). *I-SOLVE evaluation*. Presentation at I-SOLVE Science of Learning Center workshop, National Science Foundation, University of Southern California, Los Angeles, CA. (National)
- Shute, V. J. (presented 1998, April). *Women in science and engineering: the master jugglers*. Presentation at Youth Alliance Conference "Expanding your Horizons", Youth Alliance, University of Texas, San Antonio, TX. (Regional)
- Shute, V. J. (presented 1997, August). *The future of AI & education: Five scenarios*. Presentation at Artificial Intelligence in Education (AIED '97) conference, Artificial Intelligence in Education, Kobe, Japan. (International)
- Shute, V. J. (presented 1996, June). *Student modeling: An overview*. Presentation at Intelligent Tutoring Systems (ITS '96) conference, Intelligent Tutoring Systems, Montreal, Canada. (International)
- Shute, V. J. (presented 1996, March). *Demonstration of an adaptive and intelligent program teaching descriptive statistics: Stat Lady*. Presentation at Advances in Instructional Technology, Dept. of Computer and Information Science, University of Linköping, Linköping, Sweden. (International)
- Shute, V. J. (presented 1995, February). *A SMART authoring system to facilitate effective electronics training for Navy personnel*. Presentation at Office of Naval Research (ONR) conference, Office of Naval Research, Pensacola, FL. (National)

### Invited Presentations at Symposia

- Rahimi, S., & Shute, V. J. (presented 2021, June). Stealth assessment of creativity. In Janet Rafner (Chair), *Crea Suite*. Presentation at the meeting of Aarhus University, Aarhus, Denmark. (Regional)
- Shute, V. J. (presented 2020, October). Stealth assessment to promote learning. In Mina C. Johnson (Chair), *FEVAR*. Presentation at the meeting of Arizona State University, Phoenix, AZ. (National)
- Shute, V. J. (presented 2018, February). What is Evidence-Centered Design? In Mario Piacentini (Chair), *Creative Thinking Expert Group for PISA 2021*. Presentation at the meeting of Organisation for Economic Cooperation and Development (OECD), Washington, DC. (International)
- Shute, V. J., Rahimi, S., & Emihovich, B. (presented 2017, January). Assessment for learning in immersive environments. In Chris Dede & John Richards (Chair), *VR and Immersive Learning*. Presentation at the meeting of Harvard University and Beijing Normal University, Cambridge, MA. (International)
- Shute, V. J. (presented 2015, October). The future of assessment. In *Gordon Fellows Meeting*. Presentation at the meeting of Gordon Fellows Meeting, Princeton, NJ. (International)
- Shute, V. J. (presented 2014, December). Stealth assessment. In *Invited webinar address delivered to Macmillan Education*. Presentation at the meeting of Macmillan Education, New York, NY. (International)
- Shute, V. J. (presented 2014, April). Games, assessment, and learning. In Jody Clarke-Midura (Chair), *Gaming at MIT*. Presentation at the meeting of Massachusetts Institute of Technology, Boston, MA. (National)
- Shute, V. J. (presented 2014, April). Stealth assessment in Newton's Playground. In Richard Van Eck (Chair), *Gaming*. Presentation at the meeting of University of N. Dakota, Grand Forks, ND. (National)
- Shute, V. (presented 2013, June). Overview of the Newton's Playground Project. In *Invited presentation at the Gates foundation site visit*. Presentation at the meeting of Gates foundation, Tallahassee, FL. (National)
- Shute, V. (presented 2013, May). Stealth assessment. In *Invited presentation at Reasoning Mind*, <http://www.reasoningmind.org/>. Presentation at the meeting of Reasoning Mind, Houston, TX. (National)

- Shute, V. J. (presented 2012, July). Stealth assessment in games. In *Symposium on educational reform*. Presentation at the meeting of Lake County Educational Association, Leesburg, FL. (National)
- Shute, V. J. (presented 2012, March). An example of stealth assessment in Crayon Physics Deluxe. In *University of Arkansas at Little Rock Symposium of Education Directors*. Presentation at the meeting of University of Arkansas, Little Rock, AK. (National)
- Shute, V. J., & Tokac, U. (presented 2011, July). Formative feedback: Teacher training. In Fara Rohani (Chair), *Complex assessment in science education workshop, IES grant (CALA project)*. Presentation at the meeting of (IES), Tallahassee, FL. (National)
- Shute, V. J. (presented 2010, September). Assessing Early Literacy. In Eliza Dresang (Chair), *Early Childhood Literacy*. Presentation at the meeting of Valuable Initiatives in Early Learning That Work Successfully (VIEWS), Seattle, WA. (National)
- Shute, V. J. (presented 2010, August). Stealth assessment. In *FL Department of Education, Assessment Division*. Presentation at the meeting of FL DOE, Tallahassee, FL. (State)
- Shute, V. J. (presented 2001, April). Adaptive e-learning: The content, the learner, the rules (hold the hype). In *SRI Symposium*. Presentation at the meeting of Stanford Research Institute, Palo Alto, CA. (State)
- Shute, V. J. (presented 1998, February). Designing intelligent computer-based instruction. In *Teaching Learning Technology Center (TLTC) symposium*. Presentation at the meeting of Texas Tech University, Lubbock, TX. (State)
- Shute, V. J. (presented 1996, May). Practice effects of skill acquisition, outcome, efficiency, and retention: What's the deal? In *Human Computers and Interaction Symposium*. Presentation at the meeting of Carnegie-Mellon University, Pittsburgh, PA. (State)
- Shute, V. J. (presented 1996, March). How to Boost the IQ of Training Software: The design, development, and evaluation of SMART system. In *Department of Computer and Information Science*. Presentation at the meeting of University of Linköping, Linköping, Sweden. (International)
- Shute, V. J. (presented 1996, March). Industry and intelligent training systems: Research and results. In *Department of Computer and Information Science*. Presentation at the meeting of University of Linköping, Linköping, Sweden. (International)
- Shute, V. J. (presented 1995, November). Cognitive diagnosis, mastery learning, and remediation. In *Learning Sciences symposium*. Presentation at the meeting of University of Colorado, Boulder, CO. (State)

Shute, V. J. (presented 1995, October). Stat Lady: A SMART system. In *Educational Psychology and Learning symposium*. Presentation at the meeting of University of South Carolina, Columbia, SC. (State)

### **Refereed Presentations at Symposia**

Kim, Y. J., & Shute, V. J. (presented 2008, October). A creative way to assess creativity: Stealth assessment of creativity in immersive learning environments. In *Annual Dean's Symposium, Assessment for the 21st Century: Insight*. Poster presentation at the meeting of Dean's Symposium, Tallahassee, FL. (Local)

Wang, C. Y., & Shute, V. J. (presented 2008, October). An innovative assessment on collaborative learning. In *Annual Dean's Symposium, Assessment for the 21st Century: Insight*. Poster presentation at the meeting of Dean's Symposium, Tallahassee, FL. (Local)

Donmez, O., & Shute, V. J. (presented 2008, October). Using an evidence-based approach to assess learners systems thinking skills. In *Annual Dean's Symposium, Assessment for the 21st Century: Insight*. Poster presentation at the meeting of Dean's Symposium, Tallahassee, FL. (Local)

Shute, V. J., & Cline, F. (presented 2004, June). What's the evidence? Empirical practices in teaching and learning. In *Early Childhood Professional Development*. Presentation at the meeting of National Association for the Education of Young Children (NAEYC), Baltimore, MD. (National)

### **Nonrefereed Presentations at Conferences**

Hannafin, M., Smaldino, S., Brown, A., Goodyear, P., Shute, V. J., Morrison, G., Simonson, M., Lipsitz, L., & Ertmer, P. (presented 2009, October). *Publishing Your Research and Development: The Editors' Perspectives*. Presentation at Presidential panel session, Association for Educational Communications and Technology (AECT), Association for Educational Communications and Technology, Louisville, KY. (International)

Shute, V. J., & Hansen, E. G. (presented 2005, June). *An adaptive delivery system for math tests and instruction for individuals with and without visual disabilities*. Presentation at the Summer Intern Workshop, Educational Testing Service, Princeton, NJ. (State)

Shute, V. J. (presented 2004, June). *Non-cognitive predictors of college readiness*. Presentation at ETS to visitors from MCCC (Mercer County Community College), Hosted by Eleanor Horne, ETS, Princeton, NJ. (State)

Tocci, C., Shute, V. J., Casey, L., Glick, I., & Leahy, S. (presented 2004, March). *Product 2: Concept, process, and demonstration*. Presentation at ETS meeting, ETS, Princeton, NJ. (State)

Shute, V. J. (presented 2003, November). *Product Innovation (II): Purpose, personnel, process, and products*. Presentation at the RM group, ETS, Princeton, NJ. (State)

Shute, V. J. (presented 2003, October). *Overview of ACED: Adaptive content with evidence-based diagnosis*. Presentation at the Cross-Division Math Forum, ETS, Princeton, NJ. (State)

Shute, V. J. (presented 2002, June). *Automating diagnostic assessments*. Presentation at Summer Intern Program, ETS, Princeton, NJ. (State)

Shute, V. J., & Graf, E. A. (presented 2001, December). *DNA & ECD: The what, how, and why*. Presentation at Seminar for Evidence-Centered, New Product Design (ECNPD), ETS, Princeton, NJ. (State)

Shute, V. J. (presented 2001, October). *E-learning: Any time, any place, any path, any pace*. Presentation at Seminar for e-Learning Initiative, ETS, Princeton, NJ. (State)

Shute, V. J. (presented 2001, September). *K-12 CLASS: It's all about the learning*. Presentation at Seminar for the Brown Bag Series, ETS, Princeton, NJ. (State)

### **Nonrefereed Presentations at Symposia**

Shute, V. J. (presented 2008, October). Opening Remarks. In *Assessment for the 21st century: Insight*. Presentation at the meeting of the COE Dean's Symposia Series, Florida State University, Tallahassee, FL. (National)

Shute, V. J. (presented 2008, October). Response to Jim Gee's paper on 21st century learning and assessment. In *Assessment for the 21st century: Insight*. Presentation at the meeting of the COE Dean's Symposia Series, Florida State University, Tallahassee, FL. (National)

### **Invited Workshops**

Shute, V. J. (2017, May). *Measurements underlying digital badges*. Workshop delivered at NSF-supported workshop on Micro-Credentials in College Admissions, Ann Arbor, MI. (National)

### **Invited Lectures and Readings of Original Work**

- Shute, V. J. (2022, January). *Stealth Assessment*. Delivered at College of Education, University of Florida, Gainesville, FL. (Regional)
- Shute, V. J. (2021, April). *Stealth assessment in games to measure and support learning*. Delivered at University of Delaware, School of Education, CISC 374 Educational game development. (Regional)
- Shute, V. J. (2019, November). *How to measure and support things that are hard to measure and support?* Delivered at University of Michigan, Learning and Technology Department, Ann Arbor, MI. (Regional)
- Shute, V. J. (2016, November). *Assessment for learning*. Delivered at McGill University, Educational Psychology Dept, Montreal, Canada. (International)
- Shute, V. J. (2016, September). *Games, learning, and assessment*. Delivered at New York University, Teaching and Learning with Technologies, NYC, NY. (Local)
- Shute, V. J. (2016, April). *The nuts and bolts of stealth assessment*. Delivered at Teachers College, Columbia University, New York City, NY. (Regional)
- Shute, V. J. (2015, March). *Emerging Technologies: Opportunities and Challenges*. Delivered at Harvard Graduate School of Education, Cambridge, MA. (National)
- Shute, V. J. (2014, April). *Stealth assessment*. Delivered at ISD@FSU40 Professional Development Conference & Reunion, Florida State University, Tallahassee, FL. (Local)
- Shute, V. J. (2014, March). *Assessment and learning with Newton's Playground*. Delivered at College of Education's Women for FSU conference, Florida State University, Tallahassee, FL. (Local)
- Shute, V. J., & Kim, Y. J. (2013, October). *Research on games, learning, and stealth assessment*. Delivered at Colloquium for Math and Science Research, Tallahassee, FL. (Regional)
- Shute, V. J. (2013, October). *What is stealth assessment?* Delivered at Florida State University, COE, Tallahassee, FL. (Local)
- Shute, V. (2013, April). *Newton's Playground @ FSUS*. Delivered at FSUS, Tallahassee, FL. (Local)
- Shute, V. J. (2012, November). *Games & learning*. Delivered at Scientific Computing Seminar series, FSU, Tallahassee, FL. (Local)

- Shute, V. J. (2012, July). *Newton's Playground*. Delivered at Learning Systems Institute, Florida State University, Tallahassee, FL. (National)
- Shute, V. J. (2012, April). *What is stealth assessment?* Delivered at Utah State University, Salt Lake City, UT. (Regional)
- Shute, V. J. (2012, March). *An example of stealth assessment in Crayon Physics Deluxe*. Delivered at Little Rock Symposium of Education Directors, Little Rock, AK (webinar). (Regional)
- Shute, V. J. (2012, March). *Stealth assessment in Crayon Physics Deluxe*. Delivered at Florida State University, Tallahassee, FL. (National)
- Shute, V. J. (2011, October). *Stealth assessment*. Delivered at Florida State University, Tallahassee, FL. (National)
- Shute, V. J. (2011, September). *Games, learning, and stealth assessment*. Delivered at Florida State University, Tallahassee, FL. (National)
- Shute, V. J., & Ventura, M. (2011, July). *Developing stealth assessments for use in digital games*. Delivered at Florida State University Schools (FSUS), Tallahassee, FL. (National)
- Shute, V. J. (2010, August). *Assessing student learning*. Delivered at Florida State University (FSU) Dept. of Biological Sciences, Tallahassee, FL. (Local)
- Shute, V. J. (2009, August). *Assessing student learning*. Delivered at Florida State University (FSU) Dept. of Biological Sciences, Tallahassee, FL. (Local)
- Shute, V. J. (2008, November). *Evaluation of an assessment-for-learning system (ACED)*. Delivered at FSU's College of Information Brown Bag Lunch Series, Tallahassee, FL. (Local)
- Shute, V. J. (2008, August). *Assessing student learning*. Delivered at Florida State University Dept. of Biological Sciences, Tallahassee, FL. (Local)
- Shute, V. J. (2007, March). *Evidence-based decision making*. Delivered at the Educational Psychology and Learning Systems Department, Florida State University, Tallahassee, FL. (Local)
- Shute, V. J. (2007, March). *You can't fatten a hog by weighing it... Or can you?! Evaluating ACED*. Delivered at Educational Psychology and Learning Systems Department, Florida State University, Tallahassee, FL. (Local)

- Shute, V. J., & Zapata-Rivera, D. (2006, October). *Modeling flexible belief networks: Blessed are the flexible, for they shall not get bent out of shape*. Delivered at ETS Center for Assessment Innovation and Technology Transfer Brown Bag, ETS, Princeton, NJ. (State)
- Shute, V. J. (2006, June). *Evaluating an assessment for learning system*. Delivered at the Social Science Learning Center: First Workshop Overview, Henry Center, Michigan State University, Lansing, MI. (State)
- Shute, V. J. (2006, March). *Assessments for learning*. Delivered at Graduate Center, CUNY, New York City, NY. (State)
- Shute, V. J. (2006, March). *Leveraging tools and technologies towards an educational sea change*. Delivered at Graduate Center, CUNY, New York City, NY. (Local)
- Shute, V. J., Hansen, E. G., & Underwood, J. S. (2006, February). *Untying the knot: Review of research on the influence of parental involvement on students' academic achievement at the secondary school*. Delivered at ETS R&D Leadership to support new Family Market Initiative, Princeton, NJ. (State)
- Shute, V. J. (2006, January). *Next-generation tools and technologies in education*. Delivered at ETS-Elementary & Secondary Education Team Meeting, Ewing, NJ. (State)
- Shute, V. J., Hansen, E. G., Landau, S., & Holborow, R. (2005, June). *Cool technology for math!* Delivered at Student Day, Educational Testing Service, Princeton, NJ. (State)
- Shute, V. J. (2002, November). *Intelligent tutoring systems and adaptive e-learning: Similarities and differences*. Delivered at Dr. Mislevy's Univ. of Maryland course: Cognitive Psychology and Assessment, College Park, MD. (State)
- Shute, V. J. (2001, October). *CLASS and E-learning*. Delivered at University of Maryland/ETS Roundtable, Chauncey Conference Center, Princeton, NJ. (State)
- Shute, V. J. (1998, September). *Knowledge-Excavation, regulation, and evaluation*. Delivered at ETS, Princeton, NJ. (State)
- Shute, V. J. (1995, November). *How to boost the IQ of instructional software: The design, development, and evaluation of SMART system*. Delivered at Cognitive Science program at the University of Northern Colorado, Greeley, CO. (State)
- Shute, V. J. (1995, October). *A SMART approach to teaching and learning*. Delivered at MEI Technology, San Antonio, TX. (State)

## **Master Classes**

Shute, V. J. (2020, October). *Stealth assessment in immersive environments*. Master class delivered at Future of Education in Virtual and Augmented Reality (FEVAR), Arizona State University. (National)

Kingston, N., & Shute, V. J. (2020, June). *The future of assessment in a post-Covid world*. Master class delivered at Kansas University podcast, KU. (National)

## **Digital Projects**

### **Nonrefereed Digital Projects**

Shute, V. J. (Speaker). (2018, January). *Imagine [A World of Assessment Without Tests]* [podcast]. The Edtech Podcast. Retrieved from <https://theedtechpodcast.com/101-imagine-a-world-of-assessment-without-tests-2/>

Garbarino, D., Shute, V. J., & Rahimi, A. (script writing, editing, supplies). (2017, August). *ISLT Master's student recruitment video* [original video]. FSU.

## **Information and Communication Technology**

### **Internet Web Site Development**

Shute, V. J., & Rahimi, S. (2017). *Physics Playground Website*. Retrieved from Florida State University: <https://pluto.coe.fsu.edu/ppteam/>

Shute, V. J., Ventura, M., & Small, M. (2013). *Empirical Games LLC*. Retrieved from Empirical Games LLC: <http://empiricalgames.org/>

Shute, V. J. (2001). *Artificial Intelligence and Education*. Retrieved from International conference of AI-ED: <http://www.herc.ed.ac.uk/aied2001/>

Shute, V. J. (1998). *Intelligent Tutoring Systems 1998*. Retrieved from the International conference of ITS 1998: <http://dblp.org/db/conf/its/its1998>

### **Computer Software Development**

Shute, V. J., Almond, R. G., & Rahimi, S. (2019). *Physics Playground (v 1.3) [Computer software]* [Computer software]. Tallahassee, FL: FSU: Public Domain. Retrieved from <https://pluto.coe.fsu.edu/ppteam/pp-links/>

- Shute, V. J., Zhao, W., & Rahimi, S. (2017). *Physics Playground (v 1.2)* [Computer software]. FSU: Public Domain. Retrieved from <https://pluto.coe.fsu.edu/ppteam/pp-links/>
- Ke, F., Shute, V., Erlebacher, G., Clark, K., Ventura, M., Smith, D., & Faizian, P. (2016). *Earthquake Rebuild* [Computer software]. Public Domain.
- Shute, V. J., Ventura, M., Zhao, W., & Small, M. (2014). *Physics Playground (v 1.1) Unity version of Newton's Playground* [Computer software]. FSU: Open source. Retrieved from <http://s496408713.onlinehome.us/pp/mari/v1.9/>
- Shute, V. J., Ventura, M., & Small, M. (2013). *Newton's Playground* [Computer software]. FSU: open source. Retrieved from <http://www.gameassesslearn.org/newton/>
- Shute, V. J., Hansen, E., Graf, A., Underwood, J., & Almond, R. G. (2007). *Adaptive Content with Evidence-based Diagnosis (ACED, Ver. 2.0)* [Computer software]. ETS. Retrieved from <http://ecd.ralmond.net/ecdwiki/ACED/ACED>
- Kuntz, D., Shute, V. J., Fife, J., Graf, E., Supernavage, M., Marquez, E., et al. (2005). *MIM: Mathematics Intervention Module 1* [Computer software]. Princeton, NJ: Educational Testing Service.
- Tocci, C., Shute, V. J., Casey, L. J., Glick, I., & Leahy, S. (2004). *Product 2: Concept, Process, and Demonstration. Ver. 0.9* [Computer software]. Princeton, NJ: Educational Testing Services.
- Shute, V. J., Graf, E. A., Casey, L. J., & Underwood, J. S. (2003). *ACED: Adaptive Content with Evidence-based Diagnosis. Ver. 1.0* [Computer software]. Princeton, NJ: Educational Testing Services.
- Shute, V. J., & Willis, R. E. (2000). *ME Tool, (Ver. 1.0) "Mental Evaluation" series of online tests to assess cognitive abilities and learning styles* [Computer software]. Houston, TX: Bright Brains.
- Gluck, K. A., Lovett, M. C., Anderson, J. R., & Shute, V. J. (1999). *The Curriculum and the Interface: A Componential Analysis of the Learning Curve* [Computer software]. Pittsburgh, PA: Carnegie Mellon University. Retrieved from <http://act-r.psy.cmu.edu/publications/pubinfo.php?id=402>
- Shute, V. J., Willis, R., & Torreano, L. (1998). *DNA--Ver. 2.0 (Automated Cognitive Task Analysis Tool)* [Computer software]. Brooks Air Force Base, TX: Armstrong Laboratory.
- Shute, V. J., Gawlick, L. A., & Lefort, N. K. (1996). *Stat Lady: Descriptive Statistics Module 2* [Computer software]. Brooks Air Force Base, TX: Armstrong Laboratory.

- Shute, V. J., Willis, R., & Sugrue, B. (1996). *DNA--Ver. 1.0 (Automated Cognitive Task Analysis Tools)* [Computer software]. Brooks Air Force Base, TX: Armstrong Laboratory.
- Shute, V. J., & Gluck, K. A. (1994). *Stat Lady: Descriptive Statistics Module 1* [Computer software]. Brooks Air Force Base, TX: Armstrong Laboratory.
- Shute, V. J., & Walker, R. (1992). *Flight Engineering Refresher Course* [Computer software]. Brooks Air Force Base, TX: Armstrong Laboratory.
- Shute, V. J., & Bremner, A. (1992). *OHM: Electricity Tutor* [Computer software]. Brooks Air Force Base, TX: Armstrong Laboratory.
- Shute, V. J., & Gawlick-Grendell, L. A. (1992). *Stat Lady: Probability Module* [Computer software]. Brooks Air Force Base, TX: Armstrong Laboratory.
- Shute, V. J., Glaser, R., & Raghavan, K. (1986). *Smithtown: Exploratory Microworld for Microeconomics* [Computer software]. University of Pittsburgh, PA: LRDC.

### **Patented Inventions**

- Shute, V. J., Hansen, E. G., & Almond, R. G. (2010). *Method and System for Designing Adaptive, Diagnostic Assessments*. 7,828,552, U.S. Patent Office. Retrieved from <http://patft.uspto.gov/>

### **Contracts and Grants**

#### **Contracts and Grants Funded**

- Ke, F., Almond, R., Shute, V. J., Clark, K., & Erlebacher, G. (Aug 2017–Jul 2021). *Mathematical learning via architectural design and modeling using E-Rebuild*. Funded by NSF. (1720533). Total award \$2,025,271.
- Shute, V. J., D'Mello, S., & Baker, R. S. (Jul 2017–Jul 2021). *Exploring adaptive cognitive and affective learning support for next-generation STEM learning games*. Funded by IES-Goal 1. (R305A170376). Total award \$1,400,000.
- Shute, V. J., D'Mello, S., & Duran, N. (Apr 2017–Mar 2020). *Collaborative Research: Interpersonal Coordination and Coregulation during Collaborative Problem Solving*. Funded by NSF-EHR. (039142). Total award \$1,470,184.
- Shute, V. J. (Jan 2017–Mar 2018). *Developing stealth assessment of calculus knowledge and skills in Variant Limits*. Funded by Triseum. Total award \$59,232.

- Shute, V. J., Ke, F., & Almond, R. (Sep 2016–Aug 2021). *Game-based assessment and support of STEM-related competencies*. Funded by NSF Cyberlearning. (037988). Total award \$1,066,257.
- Shute, V. J. (Aug 2015–Aug 2016). *Stealth assessment of integrated cognitive and noncognitive constructs*. Funded by ACT. (# RF02617). Total award \$160,000.
- Shute, V. J. (Jul 2015–Sep 2015). *Measuring art history knowledge and systems thinking in the Patronage Game*. Funded by Texas A&M University. (# 037089). Total award \$14,975.
- Shute, V. J. (May 2015–Aug 2015). *Teacher-preparation materials for Physics Playground*. Funded by Educational Testing Service. (# RF02583). Total award \$4,350.
- Shute, V. J. (Jan 2014–Jun 2015). *Game-based assessment of problem solving skill*. Funded by GlassLab. (RF02405/034454). Total award \$111,920.
- Ke, F., Shute, V. J., Erlebacher, G., & Clark, K. (2014–2017). *"E-Rebuild" – Mathematical learning via architectural design and modeling*. Funded by NSF-DRK12. (1318784). Total award \$549,937.
- Baker, R., Shute, V. J., & Ventura, M. (Oct 2012–Oct 2014). *Modeling how affect, engagement, and conscientiousness interact and influence learning in Newton's Playground*. Funded by Bill & Melinda Gates Foundation. (OPP1060038). Total award \$673,378.
- Lajoie, S. P., Kee, K. B., Labonte, F., Shute, V. J., Pekrun, R., Azevedo, R., Muis, F. R., Wiseman, J. G., Goldman, R., & Lester, J. (Sep 2012–Aug 2019). *Learning environments across disciplines (LEADS): Supporting technology-rich learning across disciplines*. Funded by SSHRC (Social Sciences and Humanities Research Council of Canada) Partnership. Total award \$2,499,995.
- Shute, V. J., Ventura, M., & KE, F. (Dec 2011–Nov 2013). *Stealth assessment in Portal 2*. Funded by MacArthur Foundation. Total award \$400,000.
- Shute, V. J., Ventura, M., & Almond, R. G. (Aug 2011–Jul 2013). *Developing stealth assessment models for use in digital games*. Funded by Gates Foundation. Total award \$594,035.
- Lang, L., Shute, V. J., & Shoen, R. (Jul 2011–Jun 2013). *Florida K-3 Mathematics Formative Assessment System-Common Core State Standards*. Funded by Florida Department of Education. Total award \$280,000.
- Rohani, F., Sanfilippo, C., Shute, V. J., & Yang, Y. (Jul 2011–Jul 2014). *An Alternate Statewide Assessment Strategy that Uses Test Results to Support Learning and Includes Measures of Problem Solving*. Funded by U.S. Department of Education. Total award \$2,056,081.

- Shute, V. J. (Oct 2010–Oct 2011). *21st Century Assessment Project*. Funded by Sub-contract through Arizona State University (Dr. J. Gee is the lead PI on a MacArthur grant). Total award \$30,000.
- Shute, V. J. (PI). (Sep 2009–Mar 2011). *Modeling and Assessing Quest to Learn*. Funded by MacArthur Foundation. Total award \$320,000.
- Shute, V. J. (PI). (Mar 2009–Mar 2009). *Modeling and Assessing Skills within Game Environments*. Funded by College of Education at FSU, Council on Research in Education. Total award \$800.
- Woolf, B. (PI), Shute, V. J., VanLehn, K., Lester, J., Suthers, D., Burlison, W., & Soloway, E. (Jan 2009–Dec 2010). *Global Resources for Online Education*. Funded by National Science Foundation. Total award \$174,305.
- Shute, V. J. (PI). (Oct 2007–Oct 2010). *21st Century Assessment Project for Situated and Socio-cultural Approaches to Learning*. Funded by Arizona State University (MacArthur grant). Total award \$230,000.
- Shute, V. J. (PI), & Briars, D. J. (co-PI). (Jan 2007–Jan 2008). *Conceptualizing a Cognitively-Based Assessment for Learning System*. Funded by Educational Testing Service. Total award \$340,000.
- Shute, V. J. (PI). (Jan 2006–Jan 2007). *Formative Feedback*. Funded by Educational Testing Service. Total award \$50,000.
- Shute, V. J. (PI), Graf, E. A., & Hansen, E. G. (Aug 2003–Aug 2006). *Adaptive E-learning for Middle School Mathematics*. Funded by National Science Foundation. Total award \$399,999.
- Shute, V. J. (PI), & Regian, J. W. (co-PI). (Jan 1997–Dec 1999). *Automated Cognitive Task Analysis and Diagnosis for Human-Performance Modeling*. Funded by Air Force Office of Scientific Research (AFOSR). Total award \$180,000.
- Regian, J. W. (PI), & Shute, V. J. (co-PI). (Jan 1997–Dec 1999). *Cognitive Engineering for Training Application*. Funded by Air Force Office of Scientific Research (AFOSR). Total award \$300,000.
- Shute, V. J. (PI). (Jun 1995–Jun 1996). *Student Modeling Approach for Responsive Tutoring*. Funded by Air Force Office of Scientific Research (AFOSR). Total award \$496,000.
- Regian, J. W. (PI), & Shute, V. J. (co-PI). (Jan 1995–Dec 1997). *Instructional Interventions for Reduction of Gender Differences in Learning*. Funded by Defense Women's Health Research Program. Total award \$300,000.

### **Contracts and Grants Denied**

Ke, F., Almond, R., Erlebacher, G., & Shute, V. (Jan 2016). *DIP: "Earthquake Rebuild" – Mathematical Thinking and Learning via Architectural Design and Modeling*. Submitted to NSF. Unspecified award amount.

Shute, V. (Jan 2016). *DIP: Collaborative Research: Affect-Sensitivity for Next-Generation STEM Educational Games (Collaboration grant with Columbia Univ and Notre Dame University)*. Submitted to NSF. Unspecified award amount.

Shute, V. J. (PI). (Dec 2015). *EXP: Stealth ACT: A Game-based Assessment to Measure Computational Thinking*. Submitted to National Science Foundation. Unspecified award amount.

### **Postdoctoral Supervision**

Bainbridge, K. (2020–21).

Rahimi, S. (2020–21).

Torres, R. (2010–11).

### **Additional Research or Original Creative Work Not Reported Elsewhere**

Shute, V. J. (2012). *Beyond the three Rs: Games as assessments to support 21st century competencies*. White House Office of Science and Technology Policy (OSTP) games for impact web site.

Shute, V. J., Ventura, M., & Small, M. (2012). *Newton's Playground*.

Shute, V. J. (2011). *Stealth assessment of 21st century competencies*. Participation in Working Examples Design Jam.

Shute, V. J., Donmez, O., & Kim, Y. J. (2010). *Assessing 21st Century Skills*. Working Examples.

Shute, V. J. (2010). *Assessing Quest to Learn*. Working Examples.

Shute, V. J., Kim, Y. J., & Razzouk, R. (2010). *ECD for Dummies*. Working Examples.

Shute, V. J., & Kim, Y. J. (2010). *The World of Goo*. Working Examples.

## **Assessments**

Shute, V. J., Lu, X., LaMee, A., & Martens, M. (2018). *Intermediate test items for Energy can Transfer and Properties of Torque*. FSU.

Shute, V. J., LaMee, A., Lu, X., & Martens, M. (2017). *Newtonian Physics Test (2 matched forms, 18 items per form)*. Florida State University.

Shute, V. J., Zhao, W., Sun, C., & Ventura, M. (2016). *Computational Thinking*.

Ventura, M., & Shute, V. J. (2014). *Virtual Spatial Navigation Assessment (VSNA), developed in Unity*. Florida State University.

Shute, V. J., Ventura, M., & Kim, Y. J. (2013). *Creativity (level creation in Physics Playground)*. Florida State University.

Shute, V., & Ventura, M. (2013). *Performance Based Measure of Persistence (PBMP)*. Florida State University.

## **Service**

### **Florida State University**

#### **FSU University Service**

Committee Member, Liberal Studies Evaluation and Assessment Committee (LSEAC) (2016–present).

Committee Member, Search committee (2012).

Committee Member, Search committee for 100% position in the Florida Center for Reading Research (FCRR) at FSU (2012).

Committee Member, Florida Center for Reading Research (FCRR) at FSU (2011).

Committee Member, Review committee for the CRC COFRS program (2010).

Advisory Board, FCR-STEM for Mathematics Formative Assessment (2008–2010).

Associate Director, PALM (Partnerships Advancing Library Media; formerly I-CELTIC), COE liaison to the college of Information (2008–2010).

Committee Member, Review committee for the CRC COFRS program (2009).

COE affiliate member for I-CELTIC, Interdisciplinary Center for Leadership, Technology Integration, and Critical Literacies, College of Information - FSU (2007–2008).

### **FSU College Service**

Marshal, COE Commencement (2017–2019).

Committee member, COE Student Life Committee (2017–2019).

ISLT faculty representative, COE Preview Day (2017).

Committee Member, COE Student Life Committee (2016–2017).

COE Commencement representative, COE Commencement (2011).

Committee Member, COE Student Life Committee (2008–2010).

Co-Chair with Dr. Becker, COE Dean's Symposia Series: Assessment for the 21st Century (2008).

Committee Member, COE Student Opportunities Committee (2007–2008).

### **FSU Department Service**

Committee Member, Faculty Evaluation (2019–present).

Program Coordinator, ISLT Doctoral program (2017–present).

Committee Member, Faculty Evaluation (2020–2021).

Department representative, Student Life (2016–2020).

Alternate member, Commencement representative--Marshal (2017–2018).

Chair, Faculty Evaluation (2017–2018).

Chair, Ad hoc EPLS Appeals Committee (2016).

Committee Member, Promotion & Tenure (2015–2016).

Committee Member, Faculty Evaluation (2014–2015).

Committee Member, Instructional Systems Alumni Jobs and Mentoring Program (2013–2014).

Committee Member, EPLS representative, Promotion & Tenure Committee (2012–2014).

Committee Member, EPLS at large representative, Evaluation Committee (2009–2012).

EPLS at large representative, Evaluation Committee (2009–2011).

Committee Member, EPSL Ad Hoc Committee on Faculty Evaluation (2009–2010).

Committee Member, Measurement & Stats Faculty Search Committee (2009–2010).

Co-Chair with Dr. Becker, COE Dean's Symposia Series: Assessment for the 21st Century (2008).

### **FSU Program Service**

Chair, Doctoral Preliminary Exams (2019–present).

Committee member, Review of EdD applications for new LDPT program (2019–present).

Chair, Doctoral Qualifying Exams (2018–present).

Committee Member, Review of MS applications (2016–present).

Committee Member, Review of PhD applications (2012–present).

Program Leader, Doctoral Students (2018–2020).

Chair, Ad hoc committee -- Student recruitment video production (2016–2017).

Chair & Editor, ISLT Alumni Newsletter (2016–2017).

Committee member, SACS representation (2014–2015).

Chair, Doctoral Exam Committee (2010–2012).

Chair and Editor, Instructional Systems Newsletter (2010–2012).

Co-Chair, Mentoring program (2010–2012).

Committee Member, Instructional Systems Alumni Relations (2009–2012).

Committee Member, Instructional Systems Program, Faculty Liaison to FSU-Instructional Systems Alumni Advisory Council (2008–2012).

Chair, Instructional Systems Spring 2011 Colloquium Series (2011).

Co-Chair, Robert Morgan Studio--Renovation and Logistics (2009–2011).

Committee Member, Instructional Systems Doctoral Committee (2007–2010).

Committee Member, Instructional Systems Faculty Search Committee (2008–2009).

Committee Member, Instructional Systems Student recruitment (2008–2009).

## **The Profession**

### **Editor for Refereed Journals**

*Instructional Science (North American editor)* (2007–2013).

*Technology, Instruction, Cognition, and Learning (Executive co-editor)* (2005–2008).

### **Guest Editing for Refereed Journals**

Rahimi, S., Shute, V. J., & Almond, R. A. (Eds.). (2026). Stealth Assessment (Special Issue) [Special Issue]. *Journal of Research on Technology in Education (JRTE)*.

Shute, V. J. (Ed.). (2011). Special Issue: Instructional Science [Special Issue] [Special Issue]. *Productive Failure in Learning from Generation and Invention Activities*.

Shute, V. J. (Ed.). (2010, March). Special Issue: Instructional Science [Special Issue]. *Expertise reversal effect*, 38(2&3).

Shute, V. J. (Ed.). (2007). Special Issue: Technology, Instruction, Cognition, and Learning [Special Issue]. *Applying cognitive models to support teaching and learning*, 5(4).

Shute, V. J. (Ed.). (2004). Special Issue: Technology, Instruction, Cognition, and Learning [Special Issue]. *Valid assessments*, 2(1).

### **Editorial Board Membership(s)**

*Technology, Instruction, Cognition, and Learning (TICL)* (2002–present).

*International Journal of Artificial Intelligence in Education (IJAIED)* (1992–present).

*Instructional Science* (1992–2013).

*Interactive Learning Environments* (1991–1997).

*Journal of Educational Psychology* (1992–1996).

### **Guest Reviewer for Refereed Journals**

*Journal of Research on Technology in Education (JRTE)* (2024–present).

*IEEE Transactions on Learning Technologies* (2019–present).

*Interactive Learning Environments* (2015–present).

*Transactions on Learning Technologies* (2015–present).

*Computers & Education* (2013–present).

*Educational Technology, Research, and Development* (2007–present).

*Review of Educational Research* (2007–present).

*Journal of Educational Psychology* (1997–present).

*Human Factors* (1992–present).

*Journal of Educational Computing Research* (1986–present).

### **Reviewer or Panelist for Grant Applications**

Gates Foundation (2011–present).

FSU's COFRS grant applications (2008–present).

National Science Foundation (2001–present).

Air Force Office of Scientific Research (AFOSR) (1994–2006).

### **Service to Professional Associations**

Program Committee member, Artificial Intelligence in Education (2017–2025).

Program Committee member, Educational Data Mining (2017–2019).

Program Committee, International conference on advanced learning technologies (2016–2018).

Program Committee member, The 17th IEEE International Conference on Advanced Learning Technologies (2017).

Program Committee member, Artificial Intelligence and Education (2014–2015).

Panelist, NSF Cyberlearning and Future Learning Technologies review committee (2014).

Workshop committee member (formative feedback forum), AIED (2013).

Workshop Co-chair, Open-educational learning environments, AIED (2013).

Panel Member, "Building the Field of Learning Analytics for Personalized Learning," Bill & Melinda Gates Foundation and MacArthur Foundation (2012–2013).

Program Committee member, "Building the Field of Learning Analytics for Personalized Learning," Bill & Melinda Gates Foundation and MacArthur Foundation (2012–2013).

Program Committee member, "Engagement and Academic Tenacity: Making the Invisible Salient and Actionable," Bill & Melinda Gates Foundation (2012).

Workshop Leader—Assessment, Conversations on Quality: A Symposium for Online Learning in K-12, MIT and the Gates Foundation (2012).

Organizing Committee member, Cognitive and Metacognitive Educational Systems (MCES 2010) (2010).

Program Committee member, Cognition and Exploratory Learning in Digital Age (CELDA '10) (2010).

Organizing Committee member, American Association of Artificial Intelligence (AAAI) (2009).

Panelist and Presenter, National Research Council's (NRC) Board on Science Education's Committee on Learning Science: Gaming, Simulation, and Education (2009).

Program Committee member, Artificial Intelligence and Education (2009).

Co-chair, Educational Games Workshop, Artificial Intelligence and Education (2009).

Co-chair, Lifelong User Modeling Workshop, Lifelong User Modeling Workshop. International Conference on User Modeling, Adaptation, and Personalization (2009).

Co-chair, Tutorials, Tutorials. Intelligent Tutoring Systems (2008).

Program Committee member, User Modeling - Educational Data Mining (2007).

Program Committee member, Cognition and Exploratory Learning in Digital Age (2006).

Co-chair & Co-organizer, Technology, Instruction, Cognition, and Learning (TICL 2006) SIG at AERA (2006).

Program Committee member, Cognition and Exploratory Learning in Digital Age (2005).

Program Committee member, Spearman IV Conference: Diagnostics for Education: Theory, Measurement, and Applications (2004).

Program Committee member, International Conferences on Advanced Learning Technologies (2003).

Program Committee Member, International Conference on Computers in Education (2002).

Program Committee member, International Conference on Computers in Education (2002).

Program Committee member, International Conference on Advanced Learning Technologies (2002).

Chair, Valid Assessments Workshop, at Intelligent Tutoring System (2002).

Program Committee member, International Conference on Artificial Intelligence in Education (2001).

Program Committee member, International Conference on Artificial Intelligence in Education (1999).

Program Committee member, AI Meets the Real World, University of Connecticut (1998).

Program Committee member, Intelligent Tutoring Systems (1998).

Co-chair, Intelligent Tutoring Systems, International Conference (1998).

Committee member, NATO - RSG. 27: Cognitive task analysis (1996–1998).

Program & Organizing Committees member, International Conference on Conceptual Structures (1997).

Program & Organizing Committees member, International Conference on Artificial Intelligence in Education (1995).

Program Committee member, International Conference on Computers in Education (1993).

Program Committee member, Conference on Intelligent Computer-Aided Training (1993).

### **Consultation**

Gates Foundation--ProductiveMath. Supporting research on ways to use AI in "productive failure" in math (2024–2026).

NSF IUSE Advisory Board. Supporting the development of psychology courses infused with data science (2023–2026).

NSF Advisory Board. Creativity Assessment Platform (CAP):Using Computational Modeling to Transform Assessments of Creativity in Engineering Design (2022–2025).

Curriculum Associates. Provide assessment/measurement support during bi-monthly meetings (2023–2025).

NSF Convergence Accelerator Program. Keynote address on the Future of Stealth Assessment (2022).

Advisory Board for RHUMBO (Innovative training Network of the Marie-Curie Actions of the European Commission. External Advisory Board (EAB) of RHUMBO (an Innovative training Network (ITN) of the Marie-Curie Actions of the EC (2018–2021).

Advisory Board, Gordon Commission: Emerging Technologies/Science and Imagination. Focused on creating sustainable, equitable, and better futures for learning, assessment, and society in and out of schools (2012–2021).

Expert Group for PISA 2021 (Design/development of Creativity Assessment). Working with OECD, ACT, and ETS (2018–2021).

Advisory Board, NSF DRK12 grant (WestEd--SimScientists grant)). Design and Development of SimScientists Games West Ed (2015–2019).

Advisory Board, Concord Consortium SmartCAD project. (2016–2019).

Advisory Board, NSF PLANS grant (UC Berkeley). (2016–2019).

Advisory Board, NSF Cyberlearning CAP grant (NY Hall of Science). Innovating Data-driven Methodologies for Documenting and Studying Informal Learning (2015–2018).

Advisory Board for NAEP (SAIL project). Consulting on NAEP Survey Assessment Innovations Laboratory (2013–2017).

Advisory Board, Kaplan Learning Innovation (KLI). (2011–2017).

Consultant, NSF DRK12 grant (TERC, Zoombinis grant). Research and development on computational thinking assessments for the Logical Journey of Zoombinis (2015–2016).

Advisory Board for I-Civics. (2014–2016).

Advisory Board for UM/ARL project. Research collaboration between the University of Memphis' Advanced Distributed Learning Center for Intelligent Tutoring Systems Research & Development and the Army Research Laboratory's Human Research and Engineering Directorate (2012–2015).

Consultant for Laureate Education, Inc. Consulting on course development, innovation and advanced topics in assessment (2012–2014).

Advisory Board for Common Sense Media. Common Sense Media, member for Common Sense Media Project (2011–2014).

Advisory Board for Games and Professional Simulations (GAPS). . Three-year advisory, to develop Educational games and assessments for 21st Century learning, with particular emphasis on STEM learning (2011-2014). Inter-university funding from NSF, MacArthur Foundation and Gates Foundation (2011–2014).

Advisory Board USC (college access game). USC Project, Strategizing for college: A game-based approach to increasing college access (2011–2014).

Pearson Assessments. PARCC item development advisory team (2012–2013).

National Academy of Sciences. Reid Schwebach, Program Officer, Board on Science Education, the National Research Council (2009–2012).

The Institute for Museum and Library Services. Consulting for the Institute for Museum and Library Services National Leadership Grant (Project VIEWS – Valuable Initiatives in Early Learning that Work Successfully) (2010–2011).

Carnegie-Mellon University, Pittsburgh, PA, Educational Technology Center (ETC). Consulting with the DML community on "working examples." (2010–2011).

Cisco/Intel/Microsoft. Advisory Board, Assessing and Teaching 21st Century Skills project. Barry McGraw, executive director (2009–2011).

W. W. Norton & Company. Consulting on Assessment Design and Development for College textbooks (2007–2010).

Florida State University. Advisory Board, FCR-STEM for Mathematics Formative Assessment (2008–2009).

Educational Testing Service. Consulting on multiple research projects and proposals relating to assessment, diagnosis, and instructional interventions (2007–2009).