

Matthew J. Ventura Ph.D.

Matthew Ventura
Research Scientist
College of Education
Florida State University
Tallahassee, FL
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Professional Preparation

University of Memphis
B.A. Psychology (2000)

University of Memphis
M.S. Psychology (2003)

University of Memphis
Ph.D. Cognitive Experimental Psychology (2005)

Professional / Research Experience

January 2011 - present
Research Scientist
College of Education
Florida State University
Tallahassee, FL

My research is focused on how video games can be used for assessment and learning. From an assessment standpoint, I am interested in how gameplay can be used to build reliable, valid assessments. From a learning perspective, I am interested in how video gameplay can aid in STEM learning as well improve various domain general.

Recently I was awarded two research grants with Valerie Shute to investigate video games as assessment and learning tools. As part of this research we are working with middle school and high school students to understand how video games can be used to create valid assessments and improve a variety of domain general skills. In the first grant (funded by the MacArthur Foundation), we are working with Valve Software to investigate how *Portal 2* can be used as an assessment tool for problem solving, spatial ability, and persistence. In the second grant (funded by the Bill and Melinda Gates Foundation), we have developed a physics-based drawing game to assess creativity and conceptual physics understanding.

May 2005 - 2010
Associate Research Scientist
Center for New Constructs
Foundational and Validity Research
Educational Testing Service (ETS)
Princeton, NJ

At ETS I conducted numerous validity studies on cognitive and non-cognitive assessments including critical thinking, conscientiousness, emotional intelligence, teamwork, creativity, and vocational interests to name a few. Additionally, I was research director of the ETS Personal Potential Index (PPI). The PPI is designed to be the first personal attribute assessment to play a role in high stakes admission decisions in graduate school. Briefly, the PPI is a rating form for mentors (e.g., faculty or employers) to rate students on various personality attributes.

Fall 2001 – Spring 2005
Research Scientist
Institute for Intelligent Systems (IIS)
Fed Ex Institute of Technology
Memphis, TN

The IIS conducts research in intelligent tutoring systems primarily focused on conversational agents using natural language processing. At the IIS I headed work on various education technology projects including AutoTutor, a conversational physics tutoring system.

Grant Awards

Shute, V. J. (PI) & Ventura, M. (Co-PI). (August, 2011). *Developing stealth assessment models for use in digital games*. Bill and Melinda Gates Foundation. Grant number OPP1035331. Two year award: \$594,035.

Shute, V. J. (PI) & Ventura, M. (Co-PI). (September, 2011). *Stealth Assessment in Portal 2*. MacArthur Foundation. Grant number 11-99517-000-USP. Two year award: \$400,000.

Editorial Service

Instructional Science (Journal) - Editorial Advisory Board (2010 - present)

Current Membership in Professional Organizations

American Education Research Association (AERA)

Teaching Experience

Spring 2009

Psychological Assessment
Undergraduate Course: Department of Psychology, College of New Jersey

Fall 2008

Psychological Assessment
Undergraduate Course: Department of Psychology, College of New Jersey

Fall 2004

Statistics – PSYC 3001
Undergraduate Course: Department of Psychology, University of Memphis

Fall 2003

Research Methods – PSYC 3002
Undergraduate Course: Department of Psychology, University of Memphis

Summer 2001

Research Methods Lab – PSYC 3002
Undergraduate Course: Department of Psychology, University of Memphis

Spring 2001

T.A. Statistics – PSYC 3001

Undergraduate Course: Department of Psychology, University of Memphis

Summer 2000

Research Methods Lab – PSYC 3002

Undergraduate Course: Department of Psychology, University of Memphis

Book Chapter Publications

Shute, V. J. & Ventura, M. (in press). *Stealth Assessment: Measuring and Supporting Learning in Video Games*. MacArthur Report. Cambridge MA: The MIT press.

Shute, V. J., Ventura, M., Kim, Y. J., & Wang, L. (in press). Video games and learning. In W. G. Tierney, Z. Corwin, T. Fullerton, and G. Ragusa (Eds.), *Postsecondary play: The role of games and social media in higher education*. Baltimore, MD: John Hopkins University Press.

Ventura, M., Zeidner, M., & Roberts, R. D. (2010). Educational assessment - assessment in domains: Assessment in schools - affective domain. In B. McGaw, P. Peterson, & E. Baker (Eds.), *International Encyclopaedia of Education* (3rd edition). (pp.256-261). Oxford, UK: Elsevier.

Ventura, M. (2010). The Detection of Faking through Word Use. In M. Zeigler, C. MacCann, & R. Roberts (Eds.), Per (Eds.), *Perspectives on Faking in Personality Assessments* (pp. xxx-xxx). New York, NY: Oxford University Press.

Shute, V. J., Ventura, M., Bauer, M. I., & Zapata-Rivera, D. (2009). Melding the power of serious games and embedded assessment to monitor and foster learning: Flow and grow. In U., Ritterfeld, M., Cody, P., Vorderer (Eds.), *Serious Games: Mechanisms and Effects* (pp.295-322). New York: Routledge, Taylor and Francis.

Burstein, J., Shore, J., Sabatini, J., Lee, Y. & Ventura, M. (2007). Developing a Text Support Tool for English Language Users. In R. Luckin, K. R. Koedinger, J.E. Greer (Eds). *Artificial intelligence in education: building technology rich learning contexts that work* (pp.542-547). New York: IOS Press.

Graesser, A.C., Penumatsa, P., Ventura, M., Cai, Z., & Hu, X. (2007). Using LSA in AutoTutor: Learning through mixed initiative dialogue in natural language. In T. Landauer, D. McNamara, S. Dennis, and W. Kintsch (Eds.), *Handbook of Latent Semantic Analysis* (pp. 243-262). Mahwah, NJ: Erlbaum.

Peer Reviewed Journal Publications

Ventura, M., Shute, V., & Zhao, W. (in press). The relationship between video game use and a performance-based measure of persistence. *Computers and Education*.

Ventura, M., Shute, V., & Kim, Y.J. (2012). Video gameplay, personality, and academic performance. *Computers and Education*, 58, 1260-1266.

Shute, V. J., Ventura, M., & Torres, R. (in press). Formative evaluation of students at Quest to Learn. *International Journal of Learning and Media*.

Louwerse, M.M., Cai, Z., Hu, X., Ventura, M., Jeuniaux, P. (2006). Cognitively inspired natural-language based knowledge representations: further explorations of Latent semantic analysis. *Journal on Artificial Intelligence Tools*, 15(6), 1021-1039.

Penumatsa, P., Ventura, M., Graesser, A.C., Franceschetti, D.R., Louwerse, M., Hu, X., Cai, Z., & the Tutoring Research Group (2006). The right threshold value: What is the right threshold of

cosine measure when using latent semantic analysis for evaluating student answers?
International Journal of Artificial Intelligence Tools, 15, 767-777.

Franklin, S., Baars, B., Ramamurthy, U., & Ventura, M., (2005). The role of consciousness in memory. *Brains, Minds and Media*, 1, 1-38.

Louwerse, M.M. & Ventura, M. (2005). How children learn the meaning of words and how computers do it (too). *Journal of the Learning Sciences*, 14, 301-309.

Schmitter-Edgecombe, M., Marks, W., Wright, M. & Ventura, M. (2004). Retrieval inhibition in directed forgetting following severe closed-head injury. *Neuropsychology*, 18, 104-114.

Graesser, A.C., Lu, S., Jackson, G.T., Mitchell, H., Ventura, M., Olney, A., & Louwerse, M.M. (2004). AutoTutor: A tutor with dialogue in natural language. *Behavioral Research Methods, Instruments, and Computers*, 36, 180-193.

Driscoll, D.M., Craig, S.D., Gholson, B., Ventura, M., Hu, X., & Graesser, A.C. (2003). Vicarious learning: Effects of overhearing dialog and monolog-like discourse in a virtual tutoring session. *Journal of Educational Computing Research*, 29, 431-450.

Craig, S., Gholson B., Ventura, M., Graesser, A. C. & the Tutoring Research Group. (2000) Overhearing dialogues and monologues in virtual tutoring sessions: effects on questioning and vicarious learning. *International Journal of Artificial Intelligence in Education*, 11, 242-253.

Peer Reviewed Conference Presentations

Shute, V. J., Ventura, M., & Kim, Y. J. (April, 2012). *Stealth assessments for measuring creativity, persistence, and physics understanding in Crayon Physics Deluxe*. In S. Lajoie (Chair). Paper presented at AERA, Vancouver, BC: American Educational Research Association.

Shute, V. J., Kim, Y. J., & Ventura, M. (April, 2012). *Assessing creativity, persistence, and conceptual physics from Crayon Physics Deluxe*. Co-chair, co-discussant, and demonstration presented at NCME, Vancouver, BC: National Council on Measurement in Education (NCME). Andre Rupp & Valerie Shute, co-organizers, Invited Session on Assessment in Games for Learning.

Shute, V. J., Ventura, M., & Kim, Y. J. (April, 2012). *Developing and evaluating stealth assessments for 21st Century competencies*. In P. Forgione (Chair). Paper presented at NCME, Vancouver, BC: National Council on Measurement in Education.

Ventura, M., MacCann, C., Roberts, R. (April, 2011). *Measuring the Relationship between Conscientiousness and Academic Outcomes using Self and Parent reports*. Paper presented at AERA, New Orleans, LA: American Educational Research Association.

Ventura, M., Bridgeman, B., & Wendler, C. (April, 2010). *A Preliminary Evaluation of the Validity of the ETS® Personal Potential Index*. In B. Naemi and P. Kyllonen (Chairs), *Noncognitive Measures in Higher Education: Expanding the Predictor and Criterion Space*. Paper presented at AERA, Denver, CO: American Educational Research Association.

Ventura, M., Kyllonen, P. (2009). *The Personal Potential Index*. In J. Burrus (Chair), *Innovation in Workforce Readiness*. 24th Annual SIOP Conference, Sheraton New Orleans, New Orleans, LA.

Ventura, M., Sabatini, J. Deane, P. (April, 2007). *An investigation of Word learning through Vocabulary Builder*. Paper presented at AERA, Chicago, IL: American Educational Research Association.

Ventura, M. Deane, P., Sabatini, J. O'Reilly, T. (2007). Vocabulary learning through Vocabulary Builder. Presentation at The 17th Annual Meeting of the Society for Text & Discourse, Glasgow, Scotland.

Ventura, M. Roberts, R D., Minsky, J., MacCann, C. & Schulze, R. (July, 2007). Noncognitive Constructs: Theory, Measures, and Applications in Education: Assessing Non-cognitive constructs through constructed response. *Presentation at the 17th Annual Meeting of the Society for Text and Discourse*, Glasgow, Scotland.

Ventura, M., Sabatini, J. (2006). Predicting Text difficulty through Basic Level Object Categories. *Presentation at The 16th Annual Meeting of the Society for Text & Discourse*, Minneapolis, MI.

Ventura, M.J., D'mello, S., Graesser, A. C., (2005). A computational Approach to Mental Models. In B. Bara, L. Barsalou, M., Bucciarelli (Eds.), *Proceedings of the 27th Annual Meeting of the Cognitive Science Society*. Mahwah, NJ: Erlbaum.

Louwerse, M. M., Cai, Z., Hu, X., Ventura, M., Jeuniaux, P. (2005). The Embodiment of Amodal Symbolic Knowledge Representations. *In the Proceedings of the 18th International Florida Artificial Intelligence Research Society (pp. 542-547)*. Menlo Park, California: The AAAI Press

Ventura, J., Ventura, M., & Olabe, J. C. (2005). Embodied Conversational Agents: Developing Usable Agents. *Proceedings of IEEE Southeast Con 2005 Conference*, Fort Lauderdale, Florida. (pp. 663- 669).

Graesser, A. C., Olney, A., Ventura, M., Jackson, G.T (2005). AutoTutor's Coverage of Expectations during Tutorial Dialogue Representations in *Proceedings of the 18th International Florida Artificial Intelligence Research Society (FLAIRS) Conference*.

Ventura, M.J., Hu, X., Graesser, A. C., Louwerse, M.M., & Olney, A. (2004). The context dependent sentence abstraction model. In K. D. Forbus, D. Gentner, & T. Regier (Eds.), *Proceedings of the 26rd Annual Meeting of the Cognitive Science Society*. Mahwah, NJ: Erlbaum.

Ventura, J. & Ventura, M. (2004). Animated Agents: Motivational Consequences, *Proceedings of IEEE SoutheastCon2004 Conference*, Greensboro, NC. (pp. 105- 109).

Ventura, M.J., Francheschetti, D.R., Penumatsa, P., Graesser, A.C., Jackson, G.T., Hu, X., Cai, Z., and the Tutoring Research Group (2004). Combining Computational Models of Short Essay Grading for Conceptual Physics Problems. In J.C. Lester, R.M. Vicari, & F. Paraguacu (Eds.), *Intelligent Tutoring Systems 2004* (pp. 423-431). Berlin, Germany: Springer.

Jackson, G.T., Ventura, M.J., Chewle, P., Graesser, A.C., and the Tutoring Research Group (2004). The Impact of Why/AutoTutor on Learning and Retention of Conceptual Physics. . In J.C. Lester, R.M. Vicari, & F. Paraguacu (Eds.), *Intelligent Tutoring Systems 2004* (pp. 501-510). Berlin, Germany: Springer.

Penumatsa, P., Ventura, M., Olde, B.A., Franceschetti, D.R., Graesser, A.C., & TRG (2003). The right threshold value: What is the right threshold of cosine measure when using latent semantic

analysis for evaluating student answers? In the *Proceedings of the 2003 Florida Artificial Intelligence Research Conference*. Menlo Park, CA: AAAI Press.

Graesser, A.C., Jackson, G.T., Mathews, E.C., Mitchell, H.H., Olney, A., Ventura, M., Chipman, P., Franceschetti, D., Hu, X., Louwse, M.M., Person, N.K., & TRG (2003). Why/AutoTutor: A test of learning gains from a physics tutor with natural language dialog. In R. Alterman and D. Hirsh (Eds.), *Proceedings of the 25rd Annual Conference of the Cognitive Science Society* (pp. 1-6). Boston, MA: Cognitive Science Society.

Graesser, A.C., Jackson, G.T., Ventura, M., Mueller, J., Hu, X., Person, N.K. (2003). The impact of conversational Navigational Guides on the Learning, Use, and Perceptions of Users of a Web site. *Proceedings of the 2003 AAAI Spring Symposia on Natural Language Generation in Spoken and Written Dialogue*. (pp.9-14). Palo Alto, CA: AAAI Press.

Ventura, M., Jackson, G. T., Person, N. K., Graesser, A. C., Hu, X., Toth, J. (2002). *Evaluating learning outcomes in an interactive web-based learning system*. Presented at the Winter Conference on Discourse, Text, and Cognition, Jackson Hole, WY.

Graesser, A. C., Hu, X., Olde, B. A., Ventura, M., Olney, A., Louwse, M., Franceschetti, D. R., & Person, N. (2002). Implementing Latent Semantic Analysis in Learning Environments with Conversational Agents and Tutorial Dialog. *Proceedings of the 24th Annual Meeting of the Cognitive Science Society* (pp. 37). Mahwah, NJ: Erlbaum.

Graesser, A.C., Hu, X., Person, N.K., Stewart, C., Toth, J., Jackson, G.T., Susarla, S., Ventura, M. (2002). Learning about the Ethical Treatment of Human Subjects in Experiment on a Web Facility with a Conversational Agent and ITS Components. In S. A. Cerri, G. Gouarderes, & F. Paraguacu (Eds.), *Intelligent Tutoring Systems 2002* (pp. 972-981). Berlin, Germany: Springer.

Craig, S. D., Gholson B., Ventura, M & the Tutoring Research Group. (2000). The effects of information presentation style on question generation. *Proceedings of the 10th annual meeting of the Society for Text and Discourse*, Lyon, France, (pp. 110-111).

Peer Reviewed ETS Research Reports

Ventura, M., Bauer, M. I., (2010). Critical Features of Serious Games: Suggestions for Moonshoot Games (ETS Research White Paper. xx-xx). Princeton, NJ: Educational Testing Service.

Ventura, M., Sabatini, J. (2009). An Investigation of Vocabulary Learning through Vocabulary Builder (ETS Research Report No. 09-23). Princeton, NJ: Educational Testing Service.

Invited Monographs

Shute, V. J., Ventura, M., & Kim, Y. J. (2011). *Synthesis report on the games, learning, and assessment (GLA) Workshop*. Paper prepared for the Gates and MacArthur Foundations.

Software/Programming Expertise

PERL

SPSS

LISREL

Notion 3 (music composition and production)

HTML

Graduate School Honors

Outstanding Research Award, Department of Psychology, University of Memphis 2005

References

Art Graesser
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Co-director, The Institute for Intelligent Systems
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