DAVID WEINTROP

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EDUCATION

Northwestern University 2010 - Present
PhD Candidate, Learning Sciences
Center for Connected Learning and Computer-based Modeling
School of Education and Social Policy
Advisor: Uri Wilensky

University of Michigan 2001 - 2005
B.S. Computer Science, Honors
College of Literature, Science, and the Arts

RESEARCH INTERESTS

Learning & Design, Computational Thinking & Computational Literacy, Computer Science Education, Broadening Participation in Computing, Video Games, Computational Research Methodologies.

My research seeks to understand how best to support learners in developing meaningful understandings of computational ideas and positive attitudes towards computing. My work lies at the intersection of the Learning Sciences, Computer Science Education, and Design, with an emphasis on the application of theory to the creation and evaluation of innovative and accessible computational learning environments.

JOURNAL ARTICLES

Weintrop, D., Beheshti, E., Horn, M. S., Orton, K., Jona, K., Trouille, L. & Wilensky, U. (In Press). Defining computational thinking for math and science classrooms. *Journal of Science Education and Technology*.

Weintrop, D., Holbert, N., Wilensky, U. & Horn, M. S. (In Press). Computational thinking in constructionist video games. *International Journal of Game-based Learning.*

Weintrop, D. & Wilensky, U. (In Press). Playing by programming: Making gameplay a programming activity. *Educational Technology.*

Weintrop, D. & Wilensky, U. (2014). Situating programming abstractions in a program-to-play game. *Informatics in Education-An International Journal.*

Under Review

Brady, C., **Weintrop, D.**, Anton, G., Orton, K., Rodriguez, S. & Wilensky, U. (Under Review). All Roads Lead to Computing: Making, Participatory Simulations, and Social Computing as pathways to Computer Science.

In Preparation

Beheshti, E., **Weintrop, D.**, Horn, M. S., Orton, K., Trouille, L., Jona, K. & Wilensky, U. Computational Thinking in the Wild: How STEM Professionals Use Computational Thinking in Their Work.

INVITED BOOK CHAPTERS

Weintrop, D. & Wilensky, U. (2014). Designing for Computational Expression: Four Principles for the Design of Learning Environments Towards Computational Literacy. In D. J. Loveless, B. Griffith, M. Berci, E. Ortlieb, P. Sullivan (Eds.), Academic Knowledge Construction and Multimodal Curriculum Development. Hershey, PA: IGI Global.

REFEREED CONFERENCE PUBLICATIONS

Brown, N. C. C., Mönig, J., Bau, A., & **Weintrop, D.** (2016) Future Directions of Blocks-based Programming. Panel to be presented at the 47th ACM Technical Symposium on Computer Science Education (SIGCSE).

Weintrop, D. & Wilensky, U. (2015). Using Commutative Assessments to Compare Conceptual Understanding in Blocks-based and Text-based Programs. In Proceedings of the 11th annual International Computing Education Research (ICER) conference. New York, NY, USA: ACM.

Weintrop, D. (2015). Comparing Text-based, Blocks-based, and Hybrid Blocks/Text Programming Tools. In Proceedings of the 11th annual International Computing Education Research (ICER) conference. New York, NY, USA: ACM.

Brady, C., **Weintrop, D.**, Gracey, K., Anton, G., & Wilensky, U. (2015). The CCL-Parallax Programmable Badge: Learning with Low-Cost, Communicative Wearable Computers. In Proceedings of the 16th Annual Conference on Information Technology Education (pp. 139–144). New York, NY, USA: ACM.

Weintrop, D. & Wilensky, U. (2015). To Block or not to Block, That is the Question: Students' Perceptions of Blocks-based Programming. In Proceedings of the 14th International Conference on Interaction Design and Children. New York, NY, USA: ACM.

Weintrop, D. & Wilensky, U. (2015). The Challenges of Studying Blocks-based Programming Environments. 2015 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC).

Weintrop, D. (2015). Blocks, Text, and the Space Between The Role of Representations in Novice Programming Environments. (2015). IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC).

Weintrop, D., Wilensky, U., Roscoe, J., & Law, D. (2015). Teaching Text-based Programming in a Blocks-based World. In Proceedings of the 46th ACM Technical Symposium on Computer Science Education (p. 678). New York, NY, USA: ACM.

Weintrop, D. (2015). Minding the Gap Between Blocks-Based and Text-Based Programming. In Proceedings of the 46th ACM Technical Symposium on Computer Science Education (p. 720). New York, NY, USA: ACM.
1st Place – Student Research Competition.

Weintrop, D., Head, B., & Wilensky, U. (2015). Plotting Programming Trajectories with the NetLogo Data Explorer. In Proceedings of Information Visualization, 2015. Chicago, IL. IEEE.

Weintrop, D. & Wilensky, U. (2015) Keeping it Old School: Classic Video Games as Inspiration for Modern Student Programs. *Proceedings of Games, Learning, & Society 11*. Madison, WI.

Holbert, N., **Weintrop, D.**, Wilensky, U., Sengupta, P., Killingsworth, S., Krinks, K., Brady, C., Clark, D., Klopfer, E., Shapiro, R. B., & Russ, R. (2014) Constructionist video games: *Combining Video Games and Constructionist Design to Support Deep Learning in Play*. Symposium at the 2014 International Conference of the Learning Sciences. Boulder, CO.

Horn, M. S., **Weintrop, D**., & Routman, E. (2014). Programming in the pond: A tabletop computer programming exhibit. In *Proceedings of the Extended Abstracts of the 32nd Annual ACM Conference on Human Factors in Computing Systems* (pp. 1417–1422). New York, NY, USA: ACM.

Weintrop, D., Beheshti, E., Horn, M. S., Orton, K., Jona, K., Trouille, L., & Wilensky, U. (2014) Interactive Assessment Tools for Computational Thinking in High School STEM Classrooms. INTETAIN 2014, Chicago, IL.

Weintrop, D. & Wilensky, U. (2014). Program-to-play videogames: Developing computational literacy through gameplay. *Proceedings of Games, Learning, & Society 10* (pp. 264-271). Madison, WI.

Weintrop, D. & Wilensky, U. (2014). Situating programming abstractions in a program-to-play game. *Proceedings of the Constructionism 2014 Conference*. Vienna, Austria.

Weintrop, D., & Wilensky, U. (2013). Know your enemy: Learning from in-game opponents. In Proceedings of the 12th International Conference on Interaction Design and Children (pp. 408–411). New York, NY, USA: ACM.

Weintrop, D., & Wilensky, U. (2013). RoboBuilder: A computational thinking game. In *Proceeding of the 44th ACM technical symposium on Computer science education* (pp. 736–736). Denver, CO: ACM.

Weintrop, D., Holbert, N., Wilensky, U., & Horn, M. S. (2012). Redefining constructionist video games: Marrying constructionism and video game design. In C. Kynigos, J. Clayson, & N. Yiannoutsou (Eds.), *Proceedings of the Constructionism 2012 Conference*. Athens, Greece.

Weintrop, D., & Wilensky, U. (2012). RoboBuilder: A Program-to-Play Constructionist Video Game. In C. Kynigos, J. Clayson, & N. Yiannoutsou (Eds.), *Proceedings of the Constructionism 2012 Conference*. Athens, Greece.

WHITE PAPERS

Jona, K., Wilensky, U., Trouille, L., Horn, M. S., Orton, K., **Weintrop, D.**, & Beheshti, E. (2014). Embedding Computational Thinking in Science, Technology, Engineering, and Math (CT-STEM). Presented at the 2014 CE21 PI and Community Meeting, Orlando, FL.

OTHER POSTERS, PRESENTATIONS & INVITED TALKS

Weintrop, D., Orton, K., Horn, M.S., Beheshti, E., Trouille, L., Jona, K., & Wilensky, U. (2016). Computational Thinking in the Science Classroom. Invited session to be

presented at the annual meeting of the National Science Teachers Association (NSTA). Nashville, TN.

Weintrop, D. & Wilensky, U. Bringing Blocks-based Programming into High School Computer Science Classrooms. Paper to be presented at the Annual Meeting of the American Educational Research Association (AERA 2016), Washington DC, USA.

Weintrop, D., Orton, K., Horn, M.S., Beheshti, E., Trouille, L., Jona, K., & Wilensky, U. (2015). Computational Thinking in the Science Classroom: Preliminary Findings from a Blended Curriculum. Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST). Chicago, IL.

Beheshti, E., **Weintrop, D.**, Orton, K., Horn, M.S. , Jona, K., Trouille, L., & Wilensky, U. (2015). Bringing Expert Computational Practices into High School Science Classrooms. Poster presented at the annual meeting of the National Association for Research in Science Teaching (NARST). Chicago, IL.

Weintrop, D., Orton, K., Horn, M.S., Beheshti, E., Trouille, L., Jona, K., & Wilensky, U. (2015). Outcomes of Bringing Computational Thinking into STEM Classrooms. Paper presented at the Annual Meeting of the American Educational Research Association (AERA 2015), Chicago, USA.

Weintrop, D. (2015). Blocks, Text, and the Space Between: The Role of Representation in Novice Programming Environments. Invited Brownbag Talk. Massachusetts Institute of Technology. Cambridge, MA.

Weintrop, D. (2015). Modality Matters: Teaching the Next Generation of Computer Scientists. Invited Brownbag Talk. DePaul University. Chicago, IL.

Weintrop, D. (2014). Teaching Computer Science: Where We Are, What We Know, and Where We Might be Heading. Invited Talk. Google Chicago. Chicago, IL.

Weintrop, D., Beheshti, E., Horn, M. S., Orton, K., Jona, K., Trouille, L., & Wilensky, U. (2014). Defining Computational Thinking for Science, Technology, Engineering, and Math. Poster presented at the Annual Meeting of the American Educational Research Association (AERA 2014), Philadelphia, USA.

Weintrop, D., Beheshti, E., Horn, M., Jona, K., Kalogera, V., & Wilensky, U. (2013) Casting a Wide Net: Embedded Computational Thinking in STEM. (2013) NSF Showcase at the *44th ACM technical symposium on Computer science education* (pp. 736–736). Denver, CO.

Trouille, L., Beheshti, E., Horn, M., Jona, K., Kalogera, V., **Weintrop, D.**, & Wilensky, U. (2013). Bringing Computational Thinking into the High School Science and Math Classroom. In *American Astronomical Society, AAS Meeting #221, #201.09*.

Weintrop, D., & Wilensky, U. (2013). Supporting Computational Expression: How Novices Use Programming Primitives in Achieving a Computational Goal. Presented at the American Education Researchers Association (AERA), San Francisco, CA, USA.

Weintrop, D., & Wilensky, U. (2013). Learning by Leveling: An Incremental Introduction to Programming. Presented at the 43rd Annual Meeting of the Jean Piaget Society Annual Meeting, Chicago, IL, USA.

Weintrop, D., Hjorth, A, & Wilensky, U. (2013). Know Your Network: Learning Social Networks Analysis Through Meaningful Manipulation. InfoSocial 2013. Evanston, IL, USA.

Horn, M., **Weintrop, D.**, Beheshti, E. & Olson, I. Spinners, Dice, and Pawns: Using board games to prepare learners for agent-based modeling activities. (2012) In M. Berland (chair) and Kafai, Y. (discussant), Fiddling on the fly: thinking, learning, and designing using board games. Symposium presented at the annual meeting of the American Education Research Association, Vancouver, British Columbia.

HONORS, AWARDS & FELLOWSHIPS

Northwestern Dissertation Year Fellowship	2015-2016
1st Place in the Graduate Student Research Competition at SIGCSE 2015	2015
Norman Design Fund Travel Grant	2015
Northwestern Cognitive Sciences Travel Grant	2013, 2015
Northwestern University Presidential Fellowship Nominee	2014
Northwestern Graduate School Travel Grant	2013, 2014
Northwestern School of Education and Social Policy Travel Grant	2012-15
NSF Graduate Research Fellowship Program – Honorable Mention	2012
Northwestern Cognitive Science University Fellowship	2010 - 2011

TEACHING EXPERIENCE

Northwestern University (Teaching Assistantships)

Design of Technological Tools for Thinking and Learning	Winter, 2013 & 2015
Designing and Constructing Models with Multi-Agent Languages	Spring, 2013 & 2015

Jane Addams Resource Corporation (Course Designer/Teacher)

Computer Literacy courses for Adult Learners	Fall, 2009

Conference Workshops

Weintrop, D., Hjorth, A., & Wilensky, U. "Know Your Network: Learning Social Networks Analysis Through Meaningful Manipulation with NetLogo". Workshop at *Constructionism 2014*. Vienna, Austria. August, 2014

Johnson, E., Hadzikadic, M., **Weintrop, D.**, & Holbert, N. "Understanding Complexity II: A Simple Guide to Using and Developing Agent-Based Models for Research". Workshop at 2013 American Political Science Association Annual Meeting and Exhibition. Chicago, IL. August, 2013

Stonedahl, F., **Weintrop, D.**, Bumbacher, E., Deustch, A, & Shannon, C. "NetLogo: Teaching with Turtles and Crossing Curricular Boundaries". Workshop at 2013 ACM technical symposium on Computer science education. Denver, CO. March, 2013

Hjorth, A., & **Weintrop, D.** "NetLogo Workshop". Workshop at *Constructionism 2012*. Athens, Greece. August, 2012

SOFTWARE

Weintrop, D. (2015). Pencil.cc. Evanston, IL: Center for Connected Learning and Computer-Based Modeling, Northwestern University. http://pencil.cc and https://github.com/dweintrop/pencilcode

Weintrop, D. (2014). Snappier! Evanston, IL: Center for Connected Learning and Computer-Based Modeling, Northwestern University. http://snappier.herokuapp.com and https://github.com/dweintrop/BoB-site

Weintrop, D. (2014). Javaseer. Evanston, IL: Center for Connected Learning and Computer-Based Modeling, Northwestern University. https://github.com/dweintrop/javaseer

Weintrop, D. (2014). BlueJ Chirper. Evanston, IL: Center for Connected Learning and Computer-Based Modeling, Northwestern University. https://github.com/dweintrop/BlueJChirper

Weintrop, D. & Horn, M. S. Computational Thinking in STEM Online Assessment Framework. (2013) Evanston, IL. Northwestern University. http://ct-stem-assess.herokuapp.com and https://github.com/TIDAL-Lab/ct-stem

Weintrop, D. *RoboBuilder*. (2011) Evanston, IL: Center for Connected Learning and Computer-Based Modeling, Northwestern University. http://ccl.northwestern.edu/roboBuilder.

SERVICE

New Media Faculty Search - Student Representative 2013 – 2014
Northwestern University Department of Learning Sciences' New Media and Learning faculty search

Ad-Hoc Reviewer
American Education Research Association (AERA)
ACM SIGCSE
Games+Learning+Society
FabLearn

MEMBERSHIP

American Education Research Association (AERA)
International Society of the Learning Sciences (ISLS)
Association of Computing Machinery (ACM)
Institute of Electrical and Electronics Engineers (IEEE)

STUDENTS MENTORED

Randall Harris II – Computer Science Work/Study Summer 2015
Amanda Anumba – Computer Science Independent Study Fall 2014
Kevin Jin – Computer Science Work/Study Summer-Fall 2014

PROFESSIONAL EXPERIENCE

Software Developer, Backstop Solutions 2008 – 2010

- Worked in a fast-paced environment building an industry leading, customizable web application serving alternative investment firms. The application is used to manage billions of dollars in assets for hedge funds, private equity firms, endowments, and pension funds.

- Established Backstop Solutions' Developer University, a forum to share innovative work, explore emerging ideas, and teach technologies to colleagues.
- Technology stack: Oracle, Hibernate, Spring, Guice, Stripes, JSPs, prototype, jQuery

Software Developer, Incisent Technologies 2005 –2007

- Member of a small, dynamic, engineering team responsible for building and maintaining a suite of web applications designed to optimize inventory and improve customer relations/tracking for the automotive retail industry.
- Technology stack: MySQL, Hibernate, Spring, Struts, JSPs

TECHNICAL SKILLS

- Fluent in Java, JavaScript, Python, C and C++ programming languages.
- Experience with numerous educational and modeling frameworks: NetLogo, Alice, Blockly, Scratch, Snap!, Pencil Code, OpenBlocks, BlueJ, Greenfoot
- Proficient with SQL and relational databases.
- Have contributed to projects built with Django, Ruby on Rails, PHP, and ASP.Net 2.0 as well as numerous Java-based stacks.
- Experience with the following web frameworks and technologies:
  - jQuery, Grunt, Node.js, Heroku, Django, Hibernate, Spring, Guice, Stripes, Struts, AJAX, AspectJ, Xfire, Web Services (SOAP, WSDL), Ant, JSPs, RESTful web services, Apache, Tomcat, JBoss, CDNs, Eclipse Plugin Framework