

DAVID WEINTROP

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APPOINTMENTS

University of Maryland 2017 - present
Assistant Professor
Department of Teaching and Learning, Policy and Leadership
College of Education
College of Information Studies

EDUCATION

Northwestern University 2010 - 2016
PhD, Learning Sciences
Advisor: Uri Wilensky

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

RESEARCH & PROFESSIONAL EXPERIENCE

University of Chicago 2016 - 2017
Postdoctoral Researcher
UChicago STEM Education
Advisor: Diana Franklin

Northwestern University 2011 - 2015
Research Assistant
Casting a Wide-Net: Bringing Computational Thinking to STEM
PIs: Uri Wilensky, Michael Horn, Kemi Jona

Backstop Solutions 2008 – 2010
Software Developer
Built a web application used to manage billions of dollars in assets for hedge funds, private equity firms, endowments, and pension funds.
Technology stack: Oracle, Hibernate, Java, Spring, Stripes, JSPs, jQuery

Incisent Technologies 2005 – 2007
Software Developer
Built a suite of web applications designed to optimize inventory and improve customer relations/tracking for the automotive retail industry.
Technology stack: MySQL, Hibernate, Java, Spring, Struts, JSPs, prototype

PUBLICATIONS

Journal Articles

Weintrop, D., Bau, D., & Wilensky, U. (2019). The cloud is the limit: A case study of programming on the web, with the web. *International Journal of Child-Computer Interaction*, 20, 1–8.

Weintrop, D. & Wilensky, U. (2018). How Block-based, Text-based, and Hybrid Block/Text Modalities Shape Novice Programming Practices. *International Journal of Child-Computer Interaction*, 17, 83–92.

Pei, C., **Weintrop, D.** & Wilensky, U. (2018). Cultivating Computational Thinking Practices and Mathematical Habits of Mind in Lattice Land. *Mathematical Thinking and Learning*, 20(1), 75–89.

Weintrop, D. & Wilensky, U. (2017). Comparing Blocks-based and Text-based Programming in High School Computer Science Classrooms. *Transactions on Computing Education*, 18(1), 1-25.

Weintrop, D. & Wilensky, U. (2017). How Block-based Languages Support Novices: A Framework for Categorizing Block-based Affordances. *Journal of Visual Languages and Sentient Systems*, 3, 92–100.

Brady, C., Orton, K., **Weintrop, D.**, Anton, G., Rodriguez, S. & Wilensky, U. (2016). All Roads Lead to Computing: Making, Participatory Simulations, and Social Computing as pathways to Computer Science. *IEEE Transactions on Education*, 60(99), 1-8.

Weintrop, D. & Wilensky, U. (2016). Playing by programming: Making gameplay a programming activity. *Educational Technology*, 56(3), 36–41.

Weintrop, D., Holbert, N., Wilensky, U. & Horn, M. S. (2016). Computational thinking in constructionist video games. *International Journal of Game-based Learning*, 6(1), 1–17.

Weintrop, D., Beheshti, E., Horn, M., Orton, K., Jona, K., Trouille, L., & Wilensky, U. (2016). Defining Computational Thinking for Mathematics and Science Classrooms. *Journal of Science Education and Technology*, 25(1), 127–147.

Weintrop, D. & Wilensky, U. (2014). Situating programming abstractions in a program-to-play game. *Informatics in Education*, 13(2), 307-321.

Under Review

Weintrop, D. & Wilensky, U. (Under Review). Transitioning from Introductory Block-based and Text-based Environments to Professional Programming Languages in High School Computer Science Classrooms.

Weintrop, D. (Under Review). Block-based Programming in Computer Science Education.

Weintrop, D., Coenraad, M.*, Palmer, J., & Franklin, D. (Under Review). The Teacher Accessibility, Equity, and Content (TEC) Rubric for Evaluating Computing Curricula.

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,

* Denotes student author

M. Berci, E. Ortlieb, P. Sullivan (Eds.), *Academic Knowledge Construction and Multimodal Curriculum Development*. Hershey, PA: IGI Global.

Peer-Reviewed Conference Proceedings[#]

Coenraad, M.*, Palmer, J., Franklin, D. & **Weintrop, D.** (2019). Enacting Identities: Participatory Design as a Context for Youth to Reflect, Project, and Apply their Emerging Identities. Paper to be presented at the 2019 Conference on Interaction Design and Children.

Cabrera, L.*, Maloney, J. & **Weintrop, D.** (2019). Programs in the Palm of your Hand: How Live Programming Shapes Children's Interactions with Physical Computing Devices. Paper to be presented at the 2019 Conference on Interaction Design and Children.

Weintrop, D., Killen, H.*, Munzar, T.*, & Franke, B. (2019). Block-based Comprehension: Exploring and Explaining Student Outcomes from a Read-only Block-based Exam. In *Proceedings of the 50th ACM Technical Symposium on Computer Science Education* (pp. 1218–1224). ACM. [32%]

Killen, H., **Weintrop, D.**, & Garvin, M. (2019). AP Computer Science Principles' Impact on the Landscape of High School Computer Science using Maryland as a Model. In *Proceedings of the 50th ACM Technical Symposium on Computer Science Education* (pp. 1060–1066). ACM. [32%]

Garvin, M., Killen, H*, Plane, J., & **Weintrop, D.** (2019). Primary School Teachers' Conceptions of Computational Thinking. In *Proceedings of the 50th ACM Technical Symposium on Computer Science Education* (pp. 899–905). ACM. [32%]

Marciano, R., Lemieux, V., Hedges, M., Tomiura, Y., Greenberg, J., Underwood, W., Fenlon, K., Kriesberg, A., Kendig, M., Jansen, G., Piety, P., **Weintrop, D.** & Kurtz, M. (2019) Establishing an International Computational Network for Librarians and Archivists. In *iConference 2019 Proceedings*. College Park, MD, USA.

Weintrop, D., Killen, H.* & Franke, B. (2018). Blocks or Text? How programming language modality makes a difference in assessing underrepresented populations. In Kay, J. and Luckin, R. (Eds.). *Rethinking Learning in the Digital Age: Making the Learning Sciences Count*, 13th International Conference of the Learning Sciences (ICLS) 2018. London, UK. [32%]

Weintrop, D., Afzal, A.*, Salac, J.*, Francis, P., Li, B., Shepherd, D. & Franklin, D. (2018). Evaluating CoBlox: A Comparative Study of Robotics Programming Environments for Adult Novices. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. pp. 366:1-12. Montreal QC, Canada: ACM Press. [26%]

Honorable Mention Award (top 5% of all submissions)

Weintrop, D., Hansen, A. K., Harlow, D. B., & Franklin, D. (2018). Starting from Scratch: Outcomes of early computer science learning experiences and implications for what comes next. In *Proceedings of the 2018 ACM Conference on International Computing Education Research* (pp. 142-150). ACM. [22%]

[#] In the field of Computer Science, archival conference proceedings such as the Association for Computing Machinery's (ACM) CHI, IDC, ICER, and SIGCSE are among the top publication venues. These are peer-reviewed publications with low acceptance rates (usually around 25%). Conference proceeding publications rival top journals in their selectivity, citations, and influence. Within the fields of human-computer interaction and computing education proceedings publications are considered on par with publications in a journal. Acceptance rates are shown in []'s where available.

- Coenraad, M.* & **Weintrop, D.** (2018). Introducing Computational Thinking Across the Curriculum with Virtual Reality. In Kong, S.C., Andone, D., Biswas, G., Crick, T., Hoppe, H.U., Hsu, T.C., Huang, R.H., Li, K.Y., Looi, C.K., Milrad, M., Sheldon, J., Shih, J.L., Sin, K.F., Tissenbaum, M., & Vahrenhold, J. (Eds.). Proceedings of the International Conference on Computational Thinking Education 2018. Hong Kong: The Education University of Hong Kong.
- Weintrop, D.** (2018). Defining, Designing, and Documenting Computational Thinking Across K-12 Education. In Kay, J. and Luckin, R. (Eds.). Rethinking Learning in the Digital Age: Making the Learning Sciences Count, 13th International Conference of the Learning Sciences (ICLS) 2018. London, UK. [32%]
- Tissenbaum, M., Sheldon, J., Sherman, M. A., Abelson, H., **Weintrop, D.**, Jona, K., Horn, M., Wilensky, U., Basu, S., Rutstein, D., Snow, E., Shear, L., Grover, S., Lee, I., Klopfer, E., Jayathirtha, G., Shaw, M., Kafai, Y., Mustafaraj, E., Temple, W., Shapiro, R. B., Lui, D., & Sorensen, C. (2018). The State of the Field in Computational Thinking Assessment. In Kay, J. and Luckin, R. (Eds.). Rethinking Learning in the Digital Age: Making the Learning Sciences Count, 13th International Conference of the Learning Sciences (ICLS) 2018. London, UK. [32%]
- Weintrop, D.**, & Wilensky, U. (2017). Between a Block and a Typeface: Designing and Evaluating Hybrid Programming Environments. In Proceedings of the 2017 Conference on Interaction Design and Children (pp. 183–192). New York, NY, USA: ACM. [21%]
- Weintrop, D.**, & Holbert, N. (2017). From Blocks to Text and Back: Programming Patterns in a Dual-Modality Environment. In Proceedings of the 2017 ACM SIGCSE Technical Symposium on Computer Science Education (pp. 633–638). New York, NY, USA: ACM. [35%]
- Weintrop, D.**, Shepherd, D., Francis, P. & Franklin, D. (2017). Blockly Goes to Work: Block-based Programming for Industrial Robots. Proceedings of the 2017 IEEE Blocks and Beyond Workshop (Blocks and Beyond).
- Franklin, D., Skifstad, G., Rolock, R., Mehrotra, I, Ding, V., Hansen, A., **Weintrop, D.** & Harlow, D. (2017). Using Upper-Elementary student performance to understand conceptual sequencing in a blocks-based Curriculum. In Proceedings of the 2017 ACM SIGCSE Technical Symposium on Computer Science Education (pp. 231–236). New York, NY, USA: ACM. [30%]
- Orton, K., **Weintrop, D.**, Beheshti, E., Horn, M., Jona, K. & Wilensky, U. (2016). Bringing Computational Thinking into High School Mathematics and Science Classrooms. Proceedings of the International Conference of the Learning Sciences (ICLS) 2016. Singapore. [31%]
- Brady, C., **Weintrop, D.**, Anton, G., & Wilensky, U. (2016). Constructionist Learning at the Group Level with Programmable Badges. Proceedings of the Constructionism 2016 Conference. Bangkok, Thailand.
- Brown, N. C. C., Mönig, J., Bau, A., & **Weintrop, D.** (2016). Future Directions of Blocks-based Programming. Panel presented at the 47th ACM Technical Symposium on Computer Science Education (SIGCSE). [35%]
- 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. [26%]

- 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. [26%]
- 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. [41%]
- 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. [23%]
- 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). [38%]
- 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). [38%]
- 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. [36%]
- 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. [36%]
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. [21%]
- 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. [55%]
- 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. [23%]
- 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. [33%]

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. [38%]

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.

Poster and Presentations

Ketelhut, D.J., Coenraad, M.*, **Weintrop, D.**, Cukier, M., Plane, P., Rahimian, R. & Wolf, T.. (2019). Game Design for Engagement and Learning about Cybersecurity. Poster presented at the 13th European Conference on Game-based Learning. Odense, Denmark.

Coenraad, M.*, Ketelhut, D.J., Cukier, M., Plane, P. & **Weintrop, D.** (2019). Trends in Cybersecurity Focused Games. Poster presented at the 13th European Conference on Game-based Learning. Odense, Denmark.

Langbeheim, E., Levy, S. T., Saba, J., Orban, C., Vieyra, R., Teeling-Smith, r., Yerushalmi, E., & **Weintrop, D.** (2019). Disentangling Coding in Secondary School Science: Contexts, Interfaces and Assessments. Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST). Baltimore, MD.

Cabrera, L.* & Weintrop, D. (2019) How Live Programming Shapes Children's Interactions with Physical Computing Devices. Paper presented at the 36th Annual Human-Computer Interaction Lab (HCIL) Symposium. College Park, MD, USA.

Coenraad, M*., Kuriakos, N*., Ketelhutt, D.J., Plane, J., Cukier, M. & **Weintrop, D.** (2019). Designing Binary Learning Games for Middle Schoolers. Paper presented at the 36th Annual Human-Computer Interaction Lab (HCIL) Symposium. College Park, MD, USA.

Weintrop, D., Fofang, J.*, Walton, M.* & Walkoe, J. Teaching Fourth Grade Mathematics and Computational Thinking with Sphero. Paper presented at the 36th Annual Human-Computer Interaction Lab (HCIL) Symposium. College Park, MD, USA.

Coenraad, M.*, Palmer, J., Franklin, D., and **Weintrop, D.** (2019). Utilizing Participatory Design to Develop a Culturally Relevant Computer Science Curriculum. In *Proceedings of the 50th ACM*

Technical Symposium on Computer Science Education (SIGCSE '19). ACM, New York, NY, USA, 1261-1261.

Weintrop, D., Killen, H*, Munzar, T*. & Franke, B. (2019). Investigating Student Performance on Programming Questions of the Advanced Placement Computer Science Principles Exam. Paper presented at the Annual Meeting of the American Educational Research Association (AERA) 2019. Toronto, ON, CA.

Basu, S., McKlin, T., Rutstein, D., **Weintrop, D.**, Yadav, A. & Burke, Q. (2019). Assessing Computational Thinking: A “Landscape” symposium about where we are at & where to go. Symposium held at the Annual Meeting of the American Educational Research Association (AERA) 2019. Toronto, ON, CA.

Killen, H*, **Weintrop, D.** & Garvin, M. (2019). AP Computer Science Principles’ Impact on High School Computer Science using Maryland as a Model. Paper presented at the Annual Meeting of the American Educational Research Association (AERA) 2019. Toronto, ON, CA.

Wheeler, E., **Weintrop, D.**, Rasmussen, A., Coenraad, M*, Cobian, M., Hellige, J. & Franklin, D (2019). The State of K-8 Computer Science in an Urban, Decentralized District According to its Teachers. Paper presented at the Annual Meeting of the American Educational Research Association (AERA) 2019. Toronto, ON, CA.

Weintrop, D., Hansen, A, Harlow, D. & Franklin, D. (2018). Bringing Computer Science into Elementary School Classrooms. Paper presented at AERA 2018. New York, NY, USA

Weintrop, D., & Wilensky, U. (2018). How the Block-based, Text-based, and Hybrid Block/Text Modalities Shape Conceptual Understandings of Programming Concepts. Paper presented at AERA 2018. New York, NY, USA

Weintrop, D. (2018) CoBlox: Making Industrial Robotics Programming Accessible to All. Paper presented at the 35th Annual Human-Computer Interaction Lab (HCIL) Symposium. College Park, MD, USA.

Weintrop, D., Bain, C. & Wilensky, U. (2017). Blocking Progress? Transitioning from Blocks-based to Text-based Programming. Paper presented at AERA 2017. San Antonio, TX, USA.

Wilensky, U. & **Weintrop, D.** (2017). Constructionist Approaches for Computational Thinking in Math and Science Classrooms. Paper presented at AERA 2017. San Antonio, TX, USA.

Weintrop, D. & Wilensky, U. (2017). Blocks-based Programming and Preparation for Future Computer Science Learning. Poster presented at AERA 2017. San Antonio, TX, USA.

Beheshti, E., **Weintrop, D.**, Swanson, H., Orton, K., Horn, M.S., Jona, K., Trouille, L., & Wilensky, U. (2017). Computational Thinking in Practice: How STEM Professionals Use CT in Their Work. Poster presented at AERA 2017. San Antonio, TX, USA.

Holbert, N. & **Weintrop, D.** (2017). Exploring why novice programmers switch between text and blocks in a dual-modality coding environment. Paper presented at AERA 2017. San Antonio, TX, USA.

Weintrop, D. & Wilensky, U. (2016) Cognitive affordances of blocks-based programming in a two-dimensional construction space. Presented at the 46th Annual Meeting of the Jean Piaget Society Annual Meeting, Chicago, IL, USA.

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

NAEd/Spencer Research Development Award	2019
NAEd/Spencer Postdoctoral Fellowship Semifinalist	2019
Schloss Dagstuhl – NSF Support Grant for Junior Researchers Award	2019
Inaugural Maryland Research Excellence Celebration Honoree	2019
SIGCHI Best Paper Honorable Mention	2018
ICLS Early Career Workshop	2018
NAEd/Spencer Postdoctoral Fellowship Semifinalist	2018
Northwestern Dissertation Year Fellowship	2015-2016
1 st 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	2012-16
NSF Graduate Research Fellowship Program – Honorable Mention	2012
Northwestern Cognitive Science University Fellowship	2010 - 2011

GRANTS, GIFTS, AND FUNDED RESEARCH

Designing a Computer Science Pre-Service Teacher Methods Course for Maryland **\$39,799**
Maryland Center for Computing Education 2019

PI: **David Weintrop**; Co-PI: Jan Plane

The goal of this proposal is to create of a computer science teacher methods course to prepare teachers to lead engaging and successful computer classes in high schools across the state. The course will incorporate the latest research on how to teach computer science concepts, introduce the latest instructional techniques and technologies, and prepare students to teach computer science in an accessible and equitable way.

Early Computational Thinking for All: Exploring the Mutually Supportive Nature of Mathematics and Computational Thinking in Fourth-Grade Classrooms **\$44,629**

Spencer Foundation Small Grant - 201900099 2019

PI: **David Weintrop**; Co-PI: Janet Walkoe

This project seeks to address issues of access, equity, and opportunity related to computational thinking education by studying the implementation of a fourth-grade curriculum intended to teach learners computational thinking practices and mathematical concepts through the use of a spherical programmable robot. Through a collaboration with the District of Columbia Public Schools, we will develop, implement, and study how our integrated approach can achieve the goal of bringing computational thinking to all learners and how it can elicit and develop children's mathematical thinking.

Developing a Computational Framework for Library and Archival Education **\$99,176**
IMLS: RE-73-18-0105 2018-2019

PI: Richard Marciano; Co-PIs: William Underwood, Michael Kurtz, Katrina Fenlon, Adam Kriesberg, Philip Piety, **David Weintrop**

University of Maryland will hold a workshop to create the building blocks of a Master's level educational curriculum to educate the next generation of librarians and archivists in the computational treatments of collections. Project outputs will include a framework for creating

curricula and lesson plans, open access tools for institutions to deliver this type of educational program, and a community development plan to seed future collaboration in this area.

Increasing the Interest of Students from Underrepresented Populations for Cybersecurity

\$142,629

LTS DO55: Academic Gaming Research

2018-2023

PIs: Michel Cukier, Jan Plane, **David Weintrop**, Diane Jass Ketelhut

Few women and minorities join the cybersecurity workforce. Despite several initiatives created over the years, progress is very slow. The goal of the project is to increase the interest of middle school age students in cybersecurity, focusing specifically on kids from historically underrepresented populations. The focus of this project is to create a series of online video games to raise interest, awareness, and knowledge of cybersecurity in this population.

Computational Thinking for All: Identifying Existing Knowledge Resources and Teaching Practices for Bringing Computational Thinking into K-12 Classrooms

\$15,000

University of Maryland, College of Education SPARC Grant

2018

This project seeks to advance the goal of bringing computational thinking to all students by investigating teachers' abilities to bring computational thinking into their classrooms in ways that: (1) draw on their existing knowledge of computing, (2) are authentic to classroom practice and disciplinary content, and (3) fit within current educational infrastructure.

Talking to Robots – Block-by-Block

\$100,000

Gift from the ABB Group

2017

PIs: David Weintrop & Diana Franklin

This year-long project was a joint venture with the ABB Group to design an intuitive, accessible block-based programming interface for their Roberta industrial robot.

Scratch Encore - Equity via a Flexible, Advanced Scratch Curriculum for Diverse Students and Teachers in Upper Elementary

\$1,030,811

NSF CS4All – CNS 1738758

2018-2020

PIs: Diana Franklin, **David Weintrop**; co-PIs, Andy Isaacs, Brenda Wilkerson

This researcher-practitioner project seeks to answer the following research question: How can we create advanced elementary Computer Science instructional materials that value advancing equity equally with student learning outcomes? In collaboration with the Chicago Public School district, we will investigate the current landscape of upper-elementary computer science instruction and will create an advanced Scratch curriculum focused on equity to help bridge introductory computer science learning experience with high school computing educational opportunities.

INVITED TALKS

Block-based Comprehension: The Impact of Program Representation on Student Performance. Invited talk at the First Annual Northwestern Computer Science/Learning Sciences Symposium. Evanston, IL, USA. 2019.

The Computational Thinking in Math and Science Taxonomy: An Update. Keynote presentation at the Advancing the Integration of Interdisciplinary Computational Thinking in the Physical and Life Sciences Conference. College Park, MD, USA. 2019.

Why Bring Computational Thinking into Archival Science? Keynote presentation at the Developing a Computational Framework for Library and Archival Education workshop. College Park, MD, USA. 2019.

Block-based Comprehension: The Impact of Program Representation on Student Performance. Keynote presentation at the 36th Annual Human-Computer Interaction Lab (HCIL) Symposium. College Park, MD, USA. 2019.

Defining, Designing and Documenting Computational Thinking for K-12 Education. Center for the Advanced Study of Communities and Information Speaker Series. College Park, MD. 2017.

To Block or Not to Block: Understanding the Effects of Programming Language Representation in High School Computer Science Classrooms. Human-Computer Interaction Lab Speaker Series. College Park, MD. 2017.

Modality Matters: Understanding the Design of Introductory Programming Environments. Keynote presentation at the 2016 Consortium for Computing Sciences in Colleges, Midwest Conference.

Computer Science at a Crossroads: Understanding Introductory Programming Environments. Google Chicago. Chicago, IL. 2016.

Computer Science at a Crossroads: Understanding Introductory Programming Environments. Northwestern University Computer Science Education Day. Evanston, IL. 2016.

Modality Matters: Understanding the Design of Introductory Programming Environments. Code.org. Seattle, WA. 2016.

Bringing Computational Thinking into Math and Science Classrooms. University of Chicago Department of Computer Science. Chicago, IL. 2016.

Defining Computational Thinking in High School Math and Science. K-12 Computer Science Framework Thought Leaders workshop. Chicago, IL. 2015.

Blocks, Text, and the Space Between: The Role of Representation in Novice Programming Environments. Massachusetts Institute of Technology. Cambridge, MA. 2015.

Modality Matters: Teaching the Next Generation of Computer Scientists. DePaul University. Chicago, IL. 2015.

Teaching Computer Science: Where We Are, What We Know, and Where We Might be Heading. Google Chicago. Chicago, IL. 2014.

TEACHING EXPERIENCE

University of Maryland

Programs Designed:

Integrated Technology in Education Post-baccalaureate Certificate

Courses Created:

TLPL 602: Foundations of Technology in Education

TLPL 603: Data-driven Decision Making in Schools and Classrooms

TLPL 605: Social, Cultural, & Ethical Dimensions of Teaching and Learning with Technology

TLPL 704: Research Seminar in Technology, Learning & Leadership

Courses Modified:

TLPL 600: Teaching and Learning with Technology

TLPL 703: Research & Technology

Courses Taught:

INST 362: User-Centered Design	Spring 2018
EDCI 788T: Graduate Seminar on Research & Technology	Spring 2018
TLPL 600: Teaching and Learning with Technology	Fall 2018
TLPL 704: Research Seminar in Technology, Learning & Leadership	Spring 2018 – Spring 2019
TLPL 788V: Graduate Seminar on Computational Thinking	Spring 2019

Northwestern University (Teaching Assistantships)

Design of Technological Tools for Thinking and Learning	Winter, 2013, 2015 & 2016
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
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Conference Workshops

Underwood, W., **Weintrop, D.**, Kurtz, M. & Marciano, R. (2019). Introducing Computational Thinking into Archival Science Education. Workshop held at the IEEE Big Data Workshop. Seattle, WA, USA. January 2019

Brady, C, **Weintrop, D.**, & Bain, C. “Hacking the Conference Badge”. Workshop at the *2nd Annual International Conference on Computational Social Science*. Evanston, Illinois. June 2016

Weintrop, D., Hjorth, A., & Wilensky, U. “NetLogo Web: Bringing Turtles to the Cloud”. Workshop at *Constructionism 2016*. Bangkok, Thailand. February 2016

Hjorth, A., **Weintrop, D.**, & Wilensky, U. “LevelSpace: Constructing Models and Explanations across Levels”. Workshop at *Constructionism 2016*. Bangkok, Thailand. February 2016

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 the 2013 American Political Science Association Annual Meeting. 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. <https://github.com/dweintrop/pencilcode> and <http://pencil.cc>

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

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>.

PROFESSIONAL ACTIVITIES & SERVICE

PISA 2021 Mathematics Framework 2018 - Present
Extended Expert Group Member

Maryland Center for Computing Education (MCCE) 2017 - Present
Advisory Board Member

K-12 Computer Science Framework 2015 – 2016
Writer

Contributing writer to the Computer Science K-12 Framework organized by Code.org, ACM, and the CSTA. I wrote substantial portions of the Impacts of Computing section. More information on the framework is available at <http://k12cs.org>

Conference Committees

International Conference for the Learning Sciences (2018), Program Committee

Blocks and Beyond (2017), Program Committee

Blocks and Beyond (2019), Organizing Committee

International Conference on Computational Thinking in Education (2017, 2018), Program Committee

Editorships

Computer Science Education - Associate Editor (2018 – present)

Ad-Hoc Reviewer (selection)

ACM CHI

ACM Interaction Design and Children (IDC)

ACM SIGCSE

ACM Transaction on Computing Education (TOCE)

American Education Research Association (AERA) Annual Conference

Computers and Education

Computer Science Education

Computational Thinking Education

FabLearn

Games+Learning+Society

IEEE Transactions on Emerging Topics in Computing

Interactive Learning Environments

International Conference for the Learning Sciences (ICLS)

International Journal of Child-Computer Interaction (IJCCI)

Journal of Science Education and Technology (JOST)

Journal of Pre-College Engineering Education Research (J-PEER)

MIT Press

Science of Computer Programming
Teachers College Record

NSF Review Panel

EHR/CISE: CS for All:RPP
EHR: STEM + C

Membership

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

STUDENTS MENTORED

Jeremiah Blanchard (University of Florida)	2019 -
Janet Bih Fofang	Fall 2019 -
Noel Kuriakos	Fall 2019 -
Heather Killen – Graduate Assistantship	Fall 2018 -
Merijke Conraad – Graduate Assistantship	Fall 2018 -
Connor Bain – Learning Sciences Independent Study	Spring 2016

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