

Umit Aslan

Ph.D. Candidate in Learning Sciences
School of Education and Social Policy
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EDUCATION

- Ph.D. Learning Sciences, Northwestern University, Evanston, IL, Aug 2026 (anticipated)
Dissertation Title: “Reimagining research methods in an age of complexity: studying people’s reasoning of complex systems through agent-based-construction [abc] interviews”
Committee: Uri Wilensky (Chair), Sharona Levy, Bruce Sherin
- M.S. Science and Mathematics Education, Bogazici University, Istanbul, Turkiye, 2014
Thesis Title: “Fostering students’ learning of probability through video game programming”
Committee: Yavuz Akpinar (Chair), Gulseren Karagoz Akar, Tufan Adiguzel
- B.S. Educational Technologies, Bogazici University, Istanbul, Turkiye, 2010

PUBLICATIONS

Journal Articles

- 2024 **Aslan, U.**, Horn, M., & Wilensky, U. (2024). Why are some students “not into” computational thinking activities embedded within high school science units? Key takeaways from a microethnographic discourse analysis study. *Science Education*, 108, 929–956. doi:10.1002/sce.21850
- 2015 Akpinar, Y. & **Aslan, U.** (2015). Supporting children’s learning of probability through video game programming. *Journal of Educational Computing Research*, 53(2), 228–259. doi:10.1177/0735633115598492

Book Chapters

- 2017 **Aslan, U.**, Dabholkar, S., & Wilensky, U. (2017). Developing multi-agent-based thought experiments: A case study on the evolution of gamete dimorphism. In G. Sukthankar. & J. A. Rodriguez-Aguilar (Eds.), *Autonomous Agents and Multiagent Systems: AAMAS 2017 Workshops, Best Papers*, (pp. 51–65). Springer, Verlag. doi:10.1007/978-3-319-71682-4_4

Journal Articles (in preparation)

- Aslan, U.**, Levy, S., LaGrassa, N., Davey, B., Horn, M., & Wilensky, U. (in preparation). Connected Chemistry redux: Outcomes of a design experiment on reconstructing the CCI unit through the CT-STEM lens.
- Aslan, U.**, Dabholkar, S., Woods, P., Noel, I., & Wilensky, U. (in preparation). Reconstructing population-level evolutionary theories through spatially explicit multi-agent-based modeling: A case study on the evolution of anisogamy.

Conference Papers (peer reviewed)

- 2021 **Aslan, U.**, Wu, S. P., Horn, M., & Wilensky, U. (2021). Connecting the “chemistry triplet” through co-designing computational models with teachers: A case study on calorimetry. Paper presented at *American Educational Research Association (AERA) 2021 Annual Meeting*. Meeting Held Virtually. doi:10.3102/1686353

- 2020 **Aslan, U.**, LaGrassa, N., Horn, M., & Wilensky, U. (2020). Phenomenological programming: A novel approach to designing domain-specific programming environments for science learning. In *Proceedings of the Interaction Design and Children Conference (IDC) 2020*, 299–310. Virtual Meeting. doi:10.1145/3392063.3394428
- Aslan, U.**, LaGrassa, N., Horn, M., & Wilensky, U. (2020). Putting the taxonomy into practice: Investigating students' learning of chemistry with integrated computational thinking activities. Paper accepted to *American Educational Research Association (AERA) 2020 Annual Meeting*. doi:10.3102/1584908
- Kelter, J. Z., Peel, A., Bain, C., Dabholkar, S., **Aslan, U.**, Horn, M., & Wilensky, U. (2020). Seeds of (r)evolution: Constructionist co-design with high school science teachers. In *Proceedings of the Constructionism Conference 2020*, 497–505.
- Aslan, U.**, LaGrassa, N., Horn, M., & Wilensky, U. (2020). Code-first learning environments for science education: a design experiment on kinetic molecular theory. In *Proceedings of the Constructionism Conference 2020*, 206–219.
- 2019 **Aslan, U.**, Anton, G., Horn, M., & Wilensky, U. (2019). Bringing powerful ideas to middle school students' lives through agent-based modeling. Paper presented at *American Educational Research Association (AERA) 2019 Annual Meeting*. Toronto, ON. doi:10.3102/1444571
- 2018 **Aslan, U.** & Wilensky, U. (2018). Agent-based Construction (a-b-c) interviews: A generative case study. In *Proceedings of the Constructionism Conference 2018*, 125–137. Vilnius, Lithuania.
- 2017 **Aslan, U.**, Dabholkar, S., & Wilensky, U. (2017). Developing multi-agent-based thought experiments: A case study on the evolution of gamete dimorphism. In *Proceedings of the Multi-Agent-Based Simulation Workshop XVIII, MABS 2017*, 47–61. Sao Paulo, Brazil. doi:10.1007/978-3-319-91587-6_4
- 2016 **Aslan, U.** & Wilensky, U. (2016). Restructuration in practice: Challenging a pop-culture evolutionary theory through agent-based modeling. In *Proceedings of the Constructionism Conference 2016*, 125–137. Bangkok, Thailand.

Conference Presentations (abstract reviewed)

- 2021 **Aslan, U.** & Wilensky, U. (2021). Constructing the NetLogo Anisogamy model. Paper Presented at the *First International Workshop on Agentization: Rendering Conventional Models with Agent-Based Computing*. Virtual meeting organized by George Mason University.
- 2016 **Aslan, U.** & Wilensky, U. (2016). Old tricks revisited: Studying probabilistic reasoning through incorporating computer modeling into Piagetian research. Paper Presented at the *46th Annual Meeting of the Jean Piaget Society*. Chicago, IL.
- 2012 **Aslan, U.** (2012). Fostering students' learning of mathematics through creative computing. Paper Presented at the *Scratch@MIT Conference*. Cambridge, MA.

Other Publications

- 2021 **Aslan, U.** & Wilensky, U. (2021). Beginner's Interactive NetLogo Dictionary (BIND). Center for Connected Learning and Computer-Based Modeling, Northwestern University. Evanston, IL. ccl.northwestern.edu/netlogo/bind/
- 2020 Namowicz, C., Levites, L., **Aslan, U.**, Lee, J., L., Horn, M., & Wilensky, U. (2020). Energy in Chemical Reactions (open-source curricular unit). CT-STEM Research Project, Northwestern University. Evanston, IL. <https://ct-stem.northwestern.edu/curriculum/preview/1678/>.
- Namowicz, C., Lindeman, K., **Aslan, U.**, Lee, J., L., Horn, M., & Wilensky, U. (2020). Kinetic Molecular Theory (open-source curricular unit). CT-STEM Research Project, Northwestern University. Evanston, IL. <https://ct-stem.northwestern.edu/curriculum/preview/2620/>.

- Aslan, U.**, Namowicz, C., Levites, L., Horn, M., & Wilensky, U. (2020). NetLogo Calorimetry Model (open-source computational model). Center for Connected Learning and Computer-Based Modeling, Northwestern University. Evanston, IL. <https://ccl.northwestern.edu/netlogo/models/Calorimetry>.
- 2019 **Aslan, U.**, LaGrassa, N., Horn, M., & Wilensky, U. (2019). Ideal Gas Laws - Connected Chemistry 2019 (open-source curricular unit). CT-STEM Research Project, Northwestern University. Evanston, IL. <https://ct-stem.northwestern.edu/curriculum/preview/565/>.
- 2016 **Aslan, U.** & Wilensky, U. (2016). NetLogo Anisogamy Model (open-source computational model). Center for Connected Learning and Computer-Based Modeling, Northwestern University. Evanston, IL. <https://ccl.northwestern.edu/netlogo/models/Anisogamy>.

RESEARCH EXPERIENCE

Northwestern University, Evanston, Illinois

- 2020–25 Ph.D. Dissertation in Learning Sciences (Supervisor: Uri Wilensky)
 Designed and conducted a study on people’s intuitive reasoning about complex systems
 Created a computationally-mediated research interview methodology
 Developed a computational knowledge analysis tool using NLP and network analysis
 Published two peer-reviewed conference papers
- 2016–22 Graduate Researcher, CT-STEM Research Project (Co-PIs: Uri Wilensky & Michael Horn)
 Developed novice-friendly programming activities for STEM courses
 Co-designed CT-ified curricular units in-service teachers
 Investigated students’ learning of science and CT
 Published one journal article and five peer-reviewed conference papers

Bogazici University, Istanbul, Turkiye

- 2012–14 Master’s Thesis in Science and Mathematics Education (Supervisor: Yavuz Akpınar)
 Designed a middle-school unit for teaching probability through game programming activities
 Conducted a quasi-experimental study on the effectiveness of the unit with 5th and 6th grade students
 Published a journal article
- 2012–14 Graduate Researcher, English as a Lingua Franca Project (Co-PIs: Yasemin Bayyurt & Nikos Sifakis)
 Established an LMS platform for a year-long in-service teacher PD program
 Collected qualitative data on teachers’ PD participation through the LMS
- 2012–14 Graduate Researcher, Teaching ESL through Mobile Multimedia Project (PI: Gulcan Ercetin)
 Developed an Android phone application to deliver multimedia ESL assessments
- 2010–12 Graduate Researcher, Using Eye Tracking in ESL Research Project (PI: Gulcan Ercetin)
 Collected eye-tracking data on ESL students’ text reading strategies
 Conducted quantitative analyses of eye-tracking data

MENTORING

Knowledge Analysis with NLP Project

Claire Schwartz, undergraduate research assistant, 2024–25

Philip Dawny Philip, master’s level research assistant, 2024–25

Beginner's Interactive NetLogo Dictionary (BIND)

James Hovet, undergraduate research assistant, 2021

Nala Bishop, undergraduate research assistant, 2021

Sydney Crawford, undergraduate research assistant, 2021

CT-STEM Research Project

Jamie Lee, undergraduate research assistant, 2019–21

Mitchell Estberg, undergraduate research assistant, 2017–18

TEACHING EXPERIENCE

Northwestern University, Evanston, Illinois

2021 Graduate Teaching Assistant, Advanced Qualitative Methods (Instructor: James Spillane)

2021 Graduate Teaching Assistant, Mapping and Spatial Analysis (Instructor: David Uttal)

2017–19 Graduate Teaching Assistant, Design of Technological Tools for Thinking and Learning (Instructor: Uri Wilensky)

Center for Talent Development, Evanston, Illinois

2025 Instructor, Brain and Behavior, CTD Summer Camp for Gifted Students (Grades 6–8)

2018 Instructor, Using Technology to Solve Society's Tough Problems, CTD Weekend Enrichment Program for Gifted Students (Grades 6–8)

2016 Instructor, Modeling Social and Natural Worlds With NetLogo, CTD Weekend Enrichment Program for Gifted Students (Grades 6–8)

Istanbul Topkapi University, Istanbul, Turkiye

2013 Adjunct Instructor, Web Design and Development

2011–2013 Adjunct Instructor, Introduction to Mathematics for Creative Professionals

PEER REVIEW

Academic Journal Peer Reviewer

ACM Transactions on Computer-Human Interaction

Journal of Educational Computing Research

Journal of Research in Science Teaching

Journal of Science Education and Technology

Science Education

Studies in Science Education

Conference Peer Reviewer

ACM Conference on Interaction Design and Children (IDC)

ACM Conference on Human Factors in Computer Systems (CHI)

Annual Meeting of the American Educational Research Association (AERA)

Annual International Conference of the National Association for Research in Science Teaching (NARST)

MEMBERSHIPS

Association for Computing Machinery (ACM)
American Educational Research Association (AERA)
American Psychological Association (APA)
International Society of the Learning Sciences (ISLS)
National Association for Research in Science Teaching (NARST)

GRANTS

2020 Research Grant, Office of Undergraduate Research, Northwestern University, \$3,500.00 USD
2013 Innovation Grant, Scientific and Technological Research Council of Turkey, \$121,000.00 USD
2011–12 Teacher PD Grant, Google Computer Science for High School (CS4HS) Initiative, \$10,000.00 USD

PROFESSIONAL EMPLOYMENT

2019–24 Operations Manager, *Roamers Therapy*, Chicago, IL
2016–22 Graduate Research Assistant, *Northwestern University*, Evanston, IL
2013–14 Software Developer, *Odyssey R&D*, Istanbul, Turkiye
2011–13 Software Developer & Adjunct Instructor, *Istanbul Topkapi University*, Istanbul, Turkiye
2010–11 Software Developer, *Istanbul Aydin University*, Istanbul, Turkiye

SPOKEN LANGUAGES

Turkish, Native Tongue
English, Fluent
Spanish, Conversational

REFERENCES

Dr. Uri Wilensky

Northwestern University
Professor of Learning Sciences, Computer Science, Cognitive Science, and Complex Systems
Co-Chair, Computer Science & Learning Sciences Ph.D. Program
Director, Center for Connected Learning and Computer-Based Modeling
Email: uri@northwestern.edu
Phone: (847) 467-7593
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Dr. Michael Horn

Northwestern University

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Director, Tangible Interaction Design and Learning Laboratory

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Dr. Sharona Levy

University of Haifa

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Head of Systems Learning & Development Lab

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