

CHRISTOPHER PROCTOR

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Education

Stanford University	PhD in Education (2020) Learning Sciences & Technology Design Dissertation: <i>Supporting Critical Computational Literacies Through Interactive Storytelling</i> Paulo Blikstein, Brigid Barron, Antero Garcia & Roy Pea
	MS in Computer Science (2019) Artificial Intelligence & Human-Computer Interaction
	MA in Education (2007) Teaching Secondary English
	BS in Symbolic Systems (2006) Decision-Making & Rationality
	BA in English (2006) Critical Theory & Early Modern Period

Professional appointments

2020- Assistant Professor of Learning Sciences, University at Buffalo, SUNY
Program director, Computer Science teacher preparation
Affiliate faculty, Department of Engineering Education
Affiliate faculty, Department of Computer Science and Engineering

Journal articles (peer reviewed)

- Kafai, Y.B., **Proctor, C.** (2021) A Reevaluation of Computational Thinking in K-12 Education: Moving Towards Computational Literacies. *Educational Researcher*.
- Kafai, Y.B., **Proctor, C.**, & Lui, D. (2020) From theory bias to theory dialogue: Embracing cognitive, situated and critical framings of computational thinking for K-12 CS education. *ACM Inroads*, 11(1), 44-53. <https://doi.org/10.1145/3381887>. (Invited republication.)
- Proctor, C.** & Blikstein, P. (2019). Unfold Studio: Supporting critical literacies of text & code. *Information and Learning Science*, 120(5/6). pp. 285-307. <https://doi-org.gate.lib.buffalo.edu/10.1108/ILS-05-2018-0039>.

Books (peer reviewed)

Blikstein, P., Bumbacher, E., Davis, R., **Proctor, C.**, & Lin, V. (Forthcoming). *Learning-Centered Design: Methodologies for the Design of Learning Technologies and Environments*. Cambridge, USA: MIT Press.

Book chapters (peer reviewed)

Burke, Q., O'Donnell, K., Angevine, C., & **Proctor, C.** (2021). Credentialing computation: Empowering teachers in computational thinking through educator microcredentials. In C. Mouza, A. Yadav, & A. Leftwich (Eds.), *Preparing pre-service teachers to teach computer science: Models, practices, and policies*.

Proctor, C. & Garcia, A. (2020). Student voices in the digital hubbub. In L. Hogg, K. Stockbridge, C.

Achieng-Evensen, & K. Stockbridge (Eds.), *Pedagogies of With-ness: Students, teachers, voice and agency*. Gorham, ME: Myers Education Press.

Full conference papers (ACM & ISLS)

- Proctor, C.**, Zheng, Y., & Blikstein, P. (2020). Comparing Cognitive and Sociocultural Assessments of Learning in Middle School Computer Science. In M. Gresalfi & I.S. Horn (Eds.). *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020*. (pp. 238-245). Nashville: International Society of the Learning Sciences. (38% accepted.)
- Kafai, Y., **Proctor, C.**, & Lui, D. (2019). From theory bias to theory dialogue: Embracing cognitive, situated and critical framings of computational thinking for K-12 CS education. In R. McCartney et al. (Eds.) *Proceedings of the 2019 ACM Conference on International Computing Education Research*. (pp. 101-109) New York: ACM. (20% accepted.) **Chair's award.**
- Proctor, C.** (2019). Measuring the computational in computational participation: Debugging interactive stories in middle school computer science. In K. Lund et al. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019*. (pp. 104-111). Lyon, France: ISLS. (31% accepted.)
- Proctor, C.**, Bigman, M., & Blikstein, P. (2019). Defining and designing computer science education in a k-12 public school district. In E. Hawthorne & M. Pérez-Quiñones (Eds.) *Proceedings of the 50th ACM Technical Symposium on Computer Science Education (SIGCSE '19)*. (pp. 314-320). New York: ACM. (32% accepted.)
- Proctor, C.**, & Blikstein, P. (2018). How broad is computational thinking? A longitudinal study of practices shaping computer science learning. In J. Kay & R. Luckin (Eds.). *Rethinking Learning in the Digital Age: Making the Learning Sciences Count, 13th International Conference of the Learning Sciences (ICLS) 2018*. (pp. 544-551). London, UK: ISLS. (32% accepted.)
- Davis, R., **Proctor, C.**, Friend, M., & Blikstein, P. (2018). Solder and wire or needle and thread: do the tools we use change the way we think? In J. Kay & R. Luckin (Eds.). *Rethinking Learning in the Digital Age: Making the Learning Sciences Count, 13th International Conference of the Learning Sciences (ICLS) 2018*. (pp. 800-807). London, UK: ISLS. (32% accepted.)

Conference proceedings (peer reviewed)

- Proctor, C.** (2021). Identity as interface. In M. Shaw & Kafai, Y.B. (Organizers) *Humanizing Computer Science Education*. Structured poster session submitted to *American Educational Research Association Annual Meeting*.
- Proctor, C.** (2021). Laughing at social media. In Flores, N. & Rosa, J. (Discussants) *The Linguistic Hierarchies Embedded in Digital Tools: Exploring the Intersections of Language, Technology & Power*. Colloquium conducted at the meeting of the American Association of Applied Linguistics.
- Proctor, C.**, Han, J., Wolf, J., Ng, K., & Blikstein, P. (2020) Recovering Constructionism in Computer Science: Design of a Ninth-grade Introductory Computer Science Course. In B. Tangney, J. Rowan Byrne, & C. Girvan (Eds.) *Proceedings of the 2020 Constructionism Conference*. (pp. 473-481). Dublin, Ireland: University of Dublin.
- Proctor, C.** (2020). *Literacy-based CS: Supporting identity, voice, and a sense of place through interactive storytelling*. [Paper presentation]. Computer Science Teachers Association Northeast (CSTA-NE).
- Proctor, C.** (2020). *Interactive storytelling: Weaving together literacies of text and code*. [Workshop].

Computer Science Teachers Association (CSTA).

- Burke, Q., Angevine, C., & **Proctor, C.** (2020). Credentialing Computation: Teacher Micro-credentials in Computational Thinking. Paper to be presented at American Educational Research Association annual conference, April 2020, San Francisco, USA. (Conference cancelled).
- Proctor, C.**, & Garcia, A. (2020). "True love or the guy that was there": Supporting Identity and Voice in Computational Literacies. In Shaw, M., & Kafai, Y. (Organizers). *Dis/Connecting with Computing: Designing for Critical Identities and Equitable Inquiry in K-12 CS Education*. Symposium to be held at American Educational Research Association annual conference, April 2020, San Francisco, USA. (Conference cancelled).
- Kafai, Y., **Proctor, C.**, Lui, D. (2019). Framing Computational Thinking for Computational Literacies in K-12 Education. In *Proceedings of the 2nd Weizenbaum Conference*. Berlin, Germany.
- Proctor, C.** (2019). Considering theory in the design of CS education infrastructure: Three framings of computational thinking. In Brusilovsky, P, T.W. Price, L. Malmi and S. Edwards. *Proceedings of SPLICE 2019 workshop Computing Science Education Infrastructure: From Tools to Data* at 15th ACM International Computing Education Research Conference, Aug 11, 2019, Toronto, Canada. (Invited submission).
- Proctor, C.** & Rogers, C. (2019). *Interactive Storytelling with Unfold Studio*. [Workshop]. Iowa Technology and Education Conference (ITEC), Des Moines, Iowa.
- Proctor, C.** & Rogers, C. (2019). *Stories Told and Lessons Learned: Literacy-based Computer Science at an Iowa Middle School*. [Paper presentation]. Iowa Technology and Education Conference (ITEC), Des Moines, Iowa.
- Boles, K., Macedo, L., **Proctor, C.**, & Blikstein, P. (2018). Manipul8: An Interactive Experience to Inspire Pattern-Based Algebraic Thinking and Representational Fluency. Demo presented at Interaction Design & Children (IDC), Trondheim, Norway.
- Mongkhonvanit, K., Zau, C., **Proctor, C.**, & Blikstein, P. (2018). Testudinata: A Tangible Interface for Exploring Functional Programming. Demo presented at Interaction Design & Children (IDC), Trondheim, Norway.
- Proctor, C.** (2018). *Interactive Storytelling*. [Workshop]. Computer Science Teachers Association (CSTA), Omaha, NE.
- Proctor, C.** (2018). *Interactive Storytelling: Weaving Together Literacies of Text and Code*. [Paper presentation]. Philadelphia Writing Project Celebration of Writing & Literacy, Philadelphia, PA.
- Proctor, C.**, & Blikstein, P. (2017). *Interactive Fiction: Weaving together literacies of text and code*. Work-in-progress paper presented at Interaction Design and Children (IDC), Stanford, CA.
- Proctor, C.** & Garcia, A. (2017). *Worldbuilding for Safe, Secure, and Private Futures: Producing Internet-Related Roleplaying Games and Interactive Fiction*. [Workshop]. MozFest. London, UK.
- Proctor, C.** & Blikstein, P. (2016). Grounding how we teach programming in why we teach programming. (pp. 127-134). In A. Sipitakiat & N. Tutiya-phuengprasert (Eds.) *Constructionism in Action*:

Proceedings of Constructionism 2016.

Grants

- 2019 **\$10,000** *Scaling ProgSnap2 for wider adoption.* SPLICE, NSF-funded workshop.
- 2019 **\$8,000** *Scaling up Unfold Studio: Computational literacy beyond Silicon Valley.* TELOS initiative, Stanford University.
- 2017 **\$4,250** *The linguistic production of learning opportunities.* Lopatin Fellowship, Stanford University.
- 2016 **\$17,000** *The contextual future of situated schools.* MediaX, Stanford University.
- 2016 **\$7,500** *Interactive fiction: Weaving together literacies of text and code.* TELOS initiative, Stanford University.

Honors & Awards

- 2019 L. Ramon Veal Research Seminar, National Council of Teachers of English
- 2017 Honorable Mention, National Science Foundation Graduate Research Fellowship

University teaching experience

- 2022 **Instructor**, University at Buffalo (SUNY), Critical Computational Literacies (new course).
- 2021 **Instructor**, University at Buffalo (SUNY), Critical Computational Literacies Design Studio (new course) and doctoral proseminar.
- 2019 **TA**, Stanford University, The Centrality of Literacies in Teaching & Learning.
- 2019 **Instructor**, Teachers College, Columbia University, Beyond Bits and Atoms: Designing Technical Tools.
- 2019 **Instructor**, Teachers College, Columbia University, Beyond Bits and Atoms Lab.
- 2018 **Instructor**, Stanford University, Beyond Bits and Atoms: Designing Technical Tools.
- 2018 **TA**, Stanford University, The Centrality of Literacies in Teaching & Learning.
- 2017 **TA**, Stanford University, Beyond Bits and Atoms: Designing Technical Tools.
- 2017 **TA**, Stanford University, The Centrality of Literacies in Teaching & Learning.

K12 teaching experience

Certifications: National Board (2012), Texas English (2009), California English & Math (2007, 2009)

- '14-'16 **Computer Science Teacher** at Creekside Learning Lab, Woodside, CA
- '13-'15 **Computer Science Teacher** at The Girls' Middle School, Palo Alto, CA
- 2010 **Teaching Shakespeare Institute**, Folger Shakespeare Library, Washington, DC
- '09-'11 **English Teacher** at Westlake High School, Austin, TX
- '07-'09 **English Teacher** at Palo Alto Senior High School, Palo Alto, CA

Software development experience

Full-stack developer with specialty in user research, UI, UX, machine learning, scientific computing. Expert in Python, Javascript, web technologies. Proficient in C, C++, Java, Swift, R.

- 2019 **Designer and developer** QC: Qualitative coding for computer scientists. (<https://pypi.org/project/qualitative-coding/>)
- '17-'19 **Research software developer** for PeerTeach, Palo Alto, CA
Designed, developed, and deployed interactive web application for helping students become more effective peer tutors.
- 2016- **Lead designer and developer** of Unfold Studio (<https://unfold.studio>)
Web application for interactive storytelling and literacy-based CS education. Deployed at 6 schools; 10k student stories submitted. (<https://unfold.studio>)
- '12-'13 **Lead developer** at cK-12 Foundation, Palo Alto, CA
As leader of cK-12's Interactive Learning Group, wrote interactive learning design framework and managed a team of 8 developing interactive algebra and geometry curricula. Designed architecture to serve over 500k interactive simulations; analyzed student interactions to assess learning.

Invited talks

- 2022 *CS Across the Curriculum: Not one more thing.* CSTA CS Across Curriculum Summit.
- 2021 *Computational literacy and multilingual learners.* AERA Educational Research Conference on Computer Science for Multilingual Students.
- 2021 *Making with AI.* Professional development workshop, Darunsikkhalai School, Bangkok, Thailand.
- 2021 *Designing Unfold Studio.* Invited course speaker, Learning Sciences: Past, Present, and Future. University of Pennsylvania.
- 2021 *Assessment for learning in K-12 Computer Science.* UpBeat speaker series, Department of Computer Science and Engineering, University at Buffalo, SUNY.
- 2020 *Measuring the Computational in Computational Participation.* Invited course speaker, Education Technology and the Learning Sciences, Teachers College, Columbia University.
- 2019 *Connecting Computational Thinking to Broader Literacies* TELOS festival, Stanford University.
- 2018 *Interdisciplinary computational thinking.* Invited course speaker, Computer Science Curriculum & Instruction, Stanford University.
- 2016 *Student journalism and mobile media.* Norcal Media Day, Journalism Education Association of Northern California, Palo Alto, CA.

Academic community

- 2022 **Panel Reviewer** for NSF Discovery Research PreK-12.
- 2021 **Reviewer** for *Journal of the Learning Sciences, Computers and Education*, International Society of the Learning Sciences Annual Meeting.
- 2021 **Critic**, Situated Technologies technical methods course, UB School of Architecture and Planning.
- '20-'21 **Invited participant** *Piecing Together the Next 15 Years of Computing Education Research*. NSF Workshop. (Grant #2039833 & #2039848).
- 2021 **Invited participant** *Integrated computational thinking delphi study*. (NSF grant #1933933).
- 2020 **Proceedings Chair** Fablearn 2020.
- 2020 **Reviewer** for *Computers in Education, International Conference of the Learning Sciences, Information and Learning Science, ACM SIGCSE*; SIGCSE Program Committee.
- 2019 **Reviewer** for *ACM SIGCSE*; SIGCSE Program Committee.
- 2019 Building a Participatory Classroom Culture Through Gaming. (In press.) NCTE Quick Reference Guide written with Antero Garcia.
- 2018 **Reviewer** International Conference of the Learning Sciences (ICLS), FabLearn 2019
- 2017 **Conference volunteer** Interaction Design & Children (IDC) 2017, Stanford, CA; FabLearn 2017, Stanford, CA
- '16-'17 **Professional development leader** Darunsikkhalai School, Bangkok, Thailand
Planned and led two four-day workshops for 35 teachers on constructionist pedagogy, with a focus on powerful ideas, assessment, and shaping learning environments.
- 2016 **Conference volunteer** FabLearn 2016, Stanford, CA
- 2015 **Professional development leader** Merced County Office of Education, California
Planned and led a two-day workshop for 20 teachers on using Arduino in STEM high school courses.

Revised January 2022