



CONNECTED LEARNING SUMMIT

Create. Play. Mobilize.

Proceedings of the 2019 Connected Learning Summit

Edited by Jeremiah H. Kalir and Danielle Filipiak

The Proceedings of the 2019 Connected Learning Summit features research and presentations from the 2019 Connected Learning Summit, held at the University of California, Irvine in October 2019. The proceedings includes full research papers and abstracts for all other presentations.



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EDITED BY JEREMIAH H. KALIR AND DANIELLE FILIPIAK

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From the Editors

Welcome to the *Proceedings of the 2019 Connected Learning Summit*.

It is our honor to share with you a proceedings that celebrates participatory, playful, and transformative learning. In 2018, the inaugural Connected Learning Summit gathered together the Digital Media and Learning Conference, the Games+Learning+Society Conference, and the Sandbox Summit to commence a new chapter of inspired inquiry and shared commitment to more equitable learning futures. In 2019, nearly 450 educators, scholars, designers, and leaders gathered at the University of California, Irvine—home of the Connected Learning Lab—for the second annual Connected Learning Summit. As evident throughout the pages of this proceedings, this community is successfully identifying and traversing new pathways for connected and creative learning that made a difference in the lives of youth, families, educators, and many others across diverse learning environments.

There were many highlights of the 2019 Connected Learning Summit, not all of which are captured in this proceedings. Notably, the summit began with a fireside chat hosted by Henry Jenkins and featuring youth activists Jessica Riestra and Justin Scott, who are leading social movements in their communities and had much to teach all attendees about tenacity, courage, and wisdom. We are also grateful for keynote presentations by sociologist and author Eve Ewing, as well as by game designer and researcher Tracy Fullerton; thank you for sharing with us your passions, incisive perspectives, and recommendations for educational change.

To publish a proceedings that features 175 sessions presented at the 2019 Connected Learning Summit requires a dedicated and skilled team. We would like to thank, first and foremost, everyone who joined us at UC Irvine and whose work is featured in these pages. The Connected Learning Summit Conference Committee—including Amon Millner, Constance Steinkuehler, Deborah Fields, Drew Davidson, Edgar Quintanilla, Emily Martin, Eric Klopfer, Fay Cobb Payton, Ira Fay, Justin Reich, Kim Jaxon, Mizuko Ito, Ricarose Roque, Sangita Shresthova, Scot Osterweil, Sam Dyson, and Kylie Pepler—has steadfastly supported the team that has produced these proceedings. And invaluable assistance was provided by Claudia Caro Sullivan and Jamieson Pond, from the Connected Learning Lab, as well as by Karen Bleske. Brad King at Carnegie Mellon University's ETC Press helped shepherd the proceedings toward publication.

If you find yourself inspired by these proceedings, please consider joining us at the 2020 Connected Learning Summit to be held July 29–31 at the Massachusetts Institute of Technology in Cambridge, Massachusetts.

On behalf of the proceedings team,

Remi Kalir and Danielle Filipiak

Co-Editors, *Proceedings of the 2019 Connected Learning Summit*

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WeScratch: Creative Coding Online Gatherings

Carmelo Presicce (MIT Media Lab)

WeScratch are free online gatherings for everyone who wants to learn how to create projects in Scratch, with support, feedback, and encouragement from others. The poster describes how the online learning experience is designed and presents a few case studies, some early results, and ideas for future directions.

<https://wescratch.media.mit.edu>

CellEnergy: Demystifying Photosynthesis With Gamified Digital Curriculum

Katrina Schleisman (Andamio Games), Adam Gordon (Andamio Games), Christopher Desjardins (University of Minnesota), Hazel Shackleton (Andamio Games), Martin Michalowski (Andamio Games), Sehoya Cotner (University of Minnesota), August Schwerdfeger (Andamio Games), Nelson Soken (Andamio Games), & Barbara Billington (University of Minnesota)

CellEnergy is an iOS educational app we developed to teach the basics of photosynthesis and cellular respiration for high school life-science courses. Through our many exploratory interviews with biology teachers, photosynthesis was identified as a particularly difficult subject area to engage students with, both because of its abstract nature and the invisible cellular processes it involves. As such we thought it was an ideal topic to address through an interactive learning app. CellEnergy exemplifies a hybrid approach to learning apps, in which the focus is primarily on learning outcomes with gamelike elements incorporated to make complex processes visible in an engaging and a playful way. The activities in CellEnergy are based on multiple evidence-based learning practices, such as retrieval practice, spaced learning, and immediate feedback. Virtual labs provide inquiry-based learning and reinforcement of science practices in the context of photosynthesis. The sequence of activities centers around a narrative in which users grow and harvest plants in order to create a common snack, such as chips and salsa, highlighting the relevance of photosynthesis in students' everyday lives. Students use points earned to buy supplies and decorative features for their "outdoor kitchen," which provides a motivational incentive for completing activities and adds a layer of gamelike engagement. Our project culminated in a cluster randomized controlled trial that included more than 600 students in 22 high school biology classrooms. We demonstrated that using CellEnergy resulted in significantly greater learning gains in both photosynthesis concept knowledge and science practices knowledge compared to standard instruction.

https://static1.squarespace.com/static/54ca95ede4b0bd5bc08a85cd/t/5d8e82c64f33c836185b7a90/1569620682943/CellEnergy_poster_for_CL.pdf

Restorying Geek Identity: Reimagining Computer Science Connections With Youth of Color Through Collaborative Quilts

Mia Shaw (University of Pennsylvania), James Joshua Coleman (University of Pennsylvania), Yasmin Kafai (University of Pennsylvania), & Ebony Elizabeth Thomas (University of Pennsylvania)

About the ETC Press

The ETC Press was founded in 2005 under the direction of Dr. Drew Davidson, the Director of Carnegie Mellon University's Entertainment Technology Center (ETC), as an open access, digital-first publishing house.

What does all that mean?

The ETC Press publishes three types of work: peer-reviewed work (research-based books, textbooks, academic journals, conference proceedings), general audience work (trade nonfiction, singles, Well Played singles), and research and white papers

The common tie for all of these is a focus on issues related to entertainment technologies as they are applied across a variety of fields.

Our authors come from a range of backgrounds. Some are traditional academics. Some are practitioners. And some work in between. What ties them all together is their ability to write about the impact of emerging technologies and its significance in society.

To distinguish our books, the ETC Press has five imprints:

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- **ETC Press: Report:** our white papers and reports produced by practitioners or academic researchers working in conjunction with partners; and
- **ETC Press: Student:** our work with undergraduate and graduate students

In keeping with that mission, the ETC Press uses emerging technologies to design all of our books and Lulu, an on-demand publisher, to distribute our e-books and print books through all the major retail chains, such as Amazon, Barnes & Noble, Kobo, and Apple, and we work with The Game Crafter to produce tabletop games.

We don't carry an inventory ourselves. Instead, each print book is created when somebody buys a copy.

Since the ETC Press is an open-access publisher, every book, journal, and proceeding is available as a free download. We're most interested in the sharing and spreading of ideas. We also have an agreement with the Association for Computing Machinery (ACM) to list ETC Press publications in the ACM Digital Library.

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This is definitely an experiment in the notion of publishing, and we invite people to participate. We are exploring what it means to “publish” across multiple media and multiple versions. We believe this is the future of publication, bridging

virtual and physical media with fluid versions of publications as well as enabling the creative blurring of what constitutes reading and writing.