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Connected Code

Why Children Need to Learn Programming

Yasmin B. Kafai and Quinn Burke

Foreword by Mitchel Resnick

Coding, once considered an arcane craft practiced by solitary techies, is now recognized by educators and theorists as a crucial skill, even a new literacy, for all

children. Programming is often promoted in K-12 schools as a way to encourage “computational thinking”—which has now become the umbrella term for understanding what computer science has to contribute to reasoning and communicating in an ever-increasingly digital world.

In *Connected Code*, Yasmin Kafai and Quinn Burke argue that although computational thinking represents an excellent starting point, the broader conception of “computational participation” better captures the twenty-first-century reality. Computational participation moves beyond the individual to focus on wider social networks and a DIY culture of digital “making.”

Kafai and Burke describe contemporary examples of computational participation: students who code not for the sake of coding but to create games, stories, and animations to share; the emergence of youth program-

ming communities; the practices and ethical challenges of remixing (rather than starting from scratch); and the move beyond stationary screens to programmable toys, tools, and textiles.

Yasmin Kafai is Professor of Learning Sciences at the University of Pennsylvania’s Graduate School of Education. She is the coauthor of *Connected Play: Tweens*

in a Virtual World and the lead editor of *Beyond Barbie and Mortal Kombat: New Perspectives on Gender and Gaming*, both published by the MIT Press, and *The Computer Clubhouse: Constructionism and Creativity in Youth Communities*. **Quinn**

Burke is Assistant Professor in the Department of Teacher Education at the College of Charleston.

“In the 21st century, computer science is just as foundational a field as any. As *Connected Code* explores, learning to build technology—rather than merely consume it—is increasingly relevant to participation in modern society.”

—Hadi Partovi, Founder, Code.org

“In *Connected Code*, Yasmin Kafai and Quinn Burke update the vision of Seymour Papert’s *Mindstorms* for today’s world of social media, maker spaces, and the ongoing ‘digital divide.’ The authors show how the goals of Seymour Papert and John Dewey can be realized in the context of today’s technologies, while pointing out who is not yet privileged to participate in modern media. Both a history of ‘code’ in education and a call to action, Kafai and Burke’s book shows us the best of making computing work for student learning—and where we are still falling short. I recommend it to teachers and researchers alike.”

—Mark Guzdial, Professor, College of Computing, Georgia Institute of Technology

“For anyone interested in children’s education and 21st-century learning, *Connected Code* is a must. Within these pages is a call to action: how we can assure that the transformative learning occurring in the digital ‘maker’ movement is brought into public schools, assuring that all students—not just the most privileged—will be involved and engaged.”

—Jane Margolis, lead author of *Stuck in the Shallow End: Education, Race, and Computing* and *Unlocking the Clubhouse: Women in Computing*



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Connected Play

Tweens in a Virtual World

Yasmin B. Kafai and Deborah A. Fields

Foreword by Mizuko Ito



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Millions of children visit virtual worlds every day. In such virtual play spaces as Habbo Hotel, Toontown, and Whyville, kids chat with friends from school, meet new people, construct avatars, and earn and spend virtual currency. In *Connected Play*, Yasmin Kafai and Deborah Fields investigate what happens when kids play in virtual worlds, how this matters for their offline lives, and what this means for the design of educational opportunities in digital worlds.

Play is fundamentally important for kids' development, but, Kafai and Fields argue, to understand play in virtual worlds, we need to connect concerns of development and culture with those of digital media and learning. Kafai and Fields do this through a detailed study of kids' play in *Whyville*, a massive, informal virtual world with educational content for tween players. Combining ethnographic accounts with analysis of logfile data, they present rich portraits and overviews of how kids learn to play in a digital domain, developing certain technological competencies; how kids learn to play well—responsibly, respectfully, and safely; and how kids learn to play creatively, creating content that becomes a part of the virtual world itself.

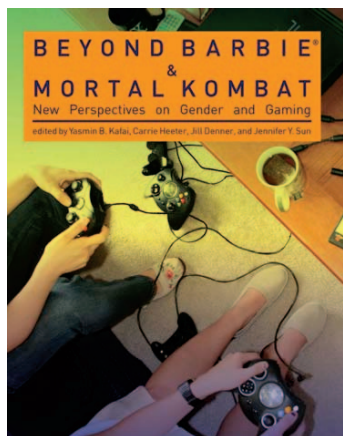
“This is a terrific multimethod analysis of nine-to-twelve-year-old users of the virtual world of Whyville. It contributes substantial information about an understudied population of tween digital media users and it contributes to an expansive understanding of how play in the digital world extends real-world experiences. *Connected Play* is an informative and yet nuanced description of the ways digital playgrounds are being used by tweens today and how these play experiences represent educational opportunities. Both children's media designers and those who study the role of digital media in children's development will find this a rich contribution to the literature.”

—Ellen Wartella, Director, Center on Media and Human Development, Northwestern University

“A rich and insightful examination of the complex—and too often misunderstood—universe of tweens' online gaming, *Connected Play* not only provides a comprehensive overview of the diverse relationships and learning opportunities that can emerge out of young people's virtual world play, but also serves as a template for how to conduct a methodologically rigorous study of a digital environment and its inhabitants.”

—Sara Grimes, Assistant Professor, Faculty of Information, University of Toronto

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