

Yasmin B. Kafai and Deborah A. Fields

foreword by Mizuko Ito



Connected Play

Tweens in a Virtual World

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Connected Play

The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning

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Connected Play: Tweens in a Virtual World, by Yasmin B. Kafai and Deborah A. Fields

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Series Foreword

In recent years, digital media and networks have become embedded in our everyday lives and are part of broad-based changes to how we engage in knowledge production, communication, and creative expression. Unlike the early years in the development of computers and computer-based media, digital media are now *commonplace* and *pervasive*, having been taken up by a wide range of individuals and institutions in all walks of life. Digital media have escaped the boundaries of professional and formal practice, and the academic, governmental, and industry homes that initially fostered their development. Now they have been taken up by diverse populations and noninstitutionalized practices, including the peer activities of youth. Although specific forms of technology uptake are highly diverse, a generation is growing up in an era where digital media are part of the taken-for-granted social and cultural fabric of learning, play, and social communication.

This book series is founded upon the working hypothesis that those immersed in new digital tools and networks are engaged in an unprecedented exploration of language, games, social interaction, problem solving, and self-directed activity that leads to diverse forms of learning. These diverse forms of learning are reflected in expressions of identity, how individuals express independence and creativity, and in their ability to learn, exercise judgment, and think systematically.

The defining frame for this series is not a particular theoretical or disciplinary approach, nor is it a fixed set of topics. Rather, the series revolves around a constellation of topics investigated from multiple disciplinary and practical frames. The series as a whole looks at the relation between youth, learning, and digital media, but each might deal with only a subset of this constellation. Erecting strict topical boundaries can exclude some of the

most important work in the field. For example, restricting the content of the series only to people of a certain age means artificially reifying an age boundary when the phenomenon demands otherwise. This becomes particularly problematic with new forms of online participation where one important outcome is the mixing of participants of different ages. The same goes for digital media, which are increasingly inseparable from analog and earlier media forms.

The series responds to certain changes in our media ecology that have important implications for learning. Specifically, these are new forms of media *literacy* and changes in the modes of media *participation*. Digital media are part of a convergence between interactive media (most notably gaming), online networks, and existing media forms. Navigating this media ecology involves a palette of literacies that are being defined through practice but require more scholarly scrutiny before they can be fully incorporated pervasively into educational initiatives. Media literacy involves not only ways of understanding, interpreting, and critiquing media, but also the means for creative and social expression, online search and navigation, and a host of new technical skills. The potential gap in literacies and participation skills creates new challenges for educators who struggle to bridge media engagement inside and outside the classroom.

The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning, published by the MIT Press, aims to close these gaps and provide innovative ways of thinking about and using new forms of knowledge production, communication, and creative expression.

Foreword

Mizuko Ito

Those of us who study young people and the Internet repeatedly encounter a set of well-meaning concerns voiced by colleagues, parents, and educators. Is online activity good or bad for kids? Does it make them antisocial or violent? Does it disconnect them from their bodies and environments? These concerns, which have been widespread ever since young people started taking up social, mobile, and gaming media, echo earlier concerns over media such as television and radio. As digital and networked technologies make their way into the hands of ever younger children, the need for careful research and balanced perspectives on these issues becomes even more paramount.

This book by Yasmin Kafai and Deborah Fields gently disarms and redirects these concerns toward a productive intergenerational dialogue and positive agenda for educational research and design. The authors do this not by simply asserting their expertise or a moral imperative about children and technology, but through careful observation and representation of the agency, ingenuity, and social conscience of children themselves. The tweens are the stars of the show. Whether through collaboratively grappling with a thorny scientific problem, collectively mobilizing against bad behavior, or developing ingenious “cheats,” workarounds, designs, and business models, Whyville is an environment for tweens to exercise agency, problem solving, and social responsibility.

It’s not, though, that adults are out of the picture or that this is a world where kids rule. Kafai, Fields, and the educators and technology designers they work with all roll up their sleeves and not only participate in Whyville but work with the tweens to make it a better place. They build new games and educational programs, engage in dialogue, and do research on the way things are, as well as how things might be shaped in the future. This activity

demonstrates a mutual respect between kids and adults that is built through shared purpose and interests.

It's this expansive stance toward the future that takes this work well beyond the hand-wringing about new technology and kids that often pervades this field of inquiry. The authors demonstrate how, through active effort, play and learning can be connected across different spheres of life, between the online and the offline, and between people of different ages. It is this kind of meaningful and intentional connectivity that provides our best hope for making the online world a productive force not just for children, but for our collective and increasingly digitally mediated future.

Acknowledgments

This book is the culmination of nearly a decade's worth of research. Yasmin Kafai was fortunate to receive, after several less successful attempts, a grant from the National Science Foundation that jumpstarted the work and resulted in nearly three dozen journal publications and book chapters and more than a hundred presentations at conferences on three continents. Along the way, more than a dozen collaborators joined us for different parts of the analyses and writings. We want to note up front that Numedeon, Inc., the company that owns and hosts Whyville.net, had no control over the publication of the results. None of the authors had any financial interest or any other official relationship with Numedeon—well, except for one time when Yasmin asked for a personal donation of 1,000 clams:

In late 2004 when we were conducting recruitments for the study, Numedeon hosted public sessions in Whyville's Greek Theater to give players a chance to meet us researchers and ask questions. Entering into the Greek Theater, one of the Whyvillians whispered to me, "u r ugly!" I promptly fled the theater and Whyville by closing down the browser. Then I composed myself. This was most likely coming from a twelve-year-old! Truth be told, he or she (in the haste of the moment, I didn't have time to see who had insulted me) was right—my avatar looked nothing special. I had yet to learn about the Whyville way. I went back into the Greek Theater but within the hour I emailed Jen Sun, the president and cofounder of Numedeon. I requested and received a donation of 1,000 clams, the virtual currency in Whyville, so I could better accessorize my avatar. I often tell this story, partly to come clean about my one-time conflict of interest, but mostly to remind myself and others of that visceral reaction and that what happens in virtual worlds is not tangential to players.

We are thankful for Numedeon's willingness—in particular to Jen Sun, Jim Bower, and Mark Dinan—to cooperate in the research studies and to provide access to their logfile data and insights about the workings of Whyville. This is still too rare an event these days. They have graciously read and commented

on the papers we have written and continue to remain in conversation with us today, though our views do not necessarily represent theirs.

Most of the work presented here was supported by a grant from the National Science Foundation (NSF-0411814), in addition to a later grant from the MacArthur Foundation to the first author. An Academic Senate grant from the University of California, Los Angeles, provided funding for pilot analyses. The views expressed are those of the authors and do not necessarily represent the views of the National Science Foundation, the John D. and Catherine T. MacArthur Foundation, the University of California, Los Angeles, the University of Pennsylvania, Utah State University, or Numedeon.

Many collaborators have joined us in this long pursuit of understanding tweens' play in Whyville. Cathleen Galas was instrumental in integrating the virtual epidemic WhyPox in science class activities. Brian Foley, now on faculty at CalState Northridge, and Nina Neulight and Linda Kao, then UCLA graduate students, documented classroom and club activities in a pilot study of Whypox. Ron Stevens, a professor of immunology at UCLA School of Medicine, helped us think about the design possibilities of virtual epidemics. Postdoctoral fellow David Feldon helped develop mixed methods early in the study of Whyville that set the stage for much of our later work; he also contributed microanalyses of the simulators of Whypox. Michael Giang has been a long-time contributor to the quantitative analyses presented in chapter 2, in helping us learn to dig through logfiles and in collaborating on mixed methods analyses of tweens' participation. Jason Fields developed innovative ways to use Mathematica for chat data analysis. Then undergraduate researchers Tina Tom and Cameron Aroz helped log massive quantities of video data and assisted in the development of some of the case studies. Kristin Searle developed half of the case studies, those of the boys, reducing clicks and chat to more narrative summaries of daily activity. Melissa Cook contributed much of the analyses concerning race in Whyville, counting the RGB colors of face parts and documenting the inequities reflected in Akbar's and discussed in the *Whyville Times*. Jackie Wong performed analyses on students' argumentation about WhyPox in their sixth grade class. Maria Quintero too delved into students' affectations regarding Whypox infections as part of her master's thesis. Jessica Henderson Costello and Cindy Tran helped document and analyze the 2008 Whyville club, and Cindy Tran especially helped in tracking kids'

changes in avatar designs. The research team of Douglas Thomas at the University of Southern California joined us for the study of tweens' flirting and dating online.

Finally, many people in addition to those listed above have provided feedback on our drafts, ideas, and writing along the way. The LTRG research group at UCLA, with Noel Enyedy and William Sandoval, provided invaluable feedback over several years on analyses and writing, bringing us down to earth in our discussions of virtual activities. Special thanks also to William Quinn Burke, Jay Pfaffman, Christon Walker, Jon Wallace, Cliff Zintgraff, and the three anonymous reviewers who provided valuable feedback on earlier and later drafts of book chapters and shaped the directions it has taken. Thanks also to Richard Davis, Veena Vasudevan, and Whitney King for careful reading and copyediting. And of course, thank you to the hundreds of Whyvillians who shared their insights with us and allowed us this glimpse into the virtual lives of tweens. We couldn't have done this without all of you!

1 Playgrounds for Millions

When twelve-year old Zoe (username “bluwave”) goes online in the virtual world of Whyville,¹ she checks her bank account for new deposits, shops for clothes for her avatar, tries on new outfits, plays games of checkers, goes to a virtual trading post to exchange clothes, and hangs out with others at the beach. She plays science games to earn some clams, Whyville’s virtual currency. She chats with friends from school and meets new people. She flirts a little. She even tries to cheat people out of their clams for a couple of weeks. Her interest in these activities will change over time; some will grow tiresome to her, while others will become more engrossing, occupying more of her time online.

At first sight, Zoe’s play in Whyville doesn’t seem much different from that of other kids playing offline. She’s playing with her looks and judging how people respond to her; she’s flirting; she’s learning to earn and manage money; she’s playing games and also scamming. As others have observed, virtual worlds include many mundane activities that are normal for kids playing with other kids.² Familiar issues like understanding oneself, learning how to respond to other people, and developing a code of ethics are at the heart of growing up.

At second glance, some aspects of Zoe’s play seem quite distinct from offline play. Players can do things digitally that are difficult (or awkward) to do physically: throw smiley faces at friends, simulate rocket launches, or change clothes in an instant. And not only clothes—players can also change their skin color, hair, lips, eyes, ears, and noses. They can actually be anything that can be drawn. Past Whyvillians have been soda cans, carrots, pharaohs, pixies, even Barack Obama. Kids also hang out with thousands, if not millions, of other kids, not just with those in the playgrounds and schoolyards of their neighborhoods.

Play in these virtual worlds is both similar to and different from what we know about the way kids have played in the past. This book is about reimagining kids' play in the new digital publics³—the virtual backyards, street corners, schoolyards, and shopping malls that have become playgrounds for millions of kids in the twenty-first century. With names like Habbo Hotel, Toontown, and Whyville, these virtual worlds suggest buildings of brick and mortar and cities with homes, streets, and neighborhoods, but in the digital domain. Millions of kids visit these virtual worlds every day. In particular, tweens, kids aged nine to twelve, are at a critical age as they transition from childhood into adolescence and their teens. As adults have put increased limits on outdoor and even indoor spaces, virtual worlds and gaming sites have figured much more prominently as centers for play. Revealing the opportunities, challenges, and dynamics of these digital playgrounds is one of the main goals of this book.⁴

We chose to call the book *Connected Play* because of the fundamental ways that digital publics extend play from the everyday spaces of kids' lives at home, in school, in clubs, and with friends, and because of the social connections created and sustained through such play that are among its primary values for friendship, family relations, and new online acquaintances. Connections are at the core of play in the digital playgrounds of the twenty-first century. We intend to illuminate what happens when kids play in virtual worlds, how this matters for their lives beyond those digital playgrounds, and what educational opportunities can be found or designed in and with those worlds.

The Digital Side of Play

We want to reimagine kids' play, to transform what we think of play and what it can be in the twenty-first century. To do this we must first understand what is familiar about kids' play in virtual worlds, what is uniquely different, and how the familiar and the different intertwine. As we will share throughout this book, many priorities from kids' everyday lives extend into the digital domain. Virtual worlds provide open but designed spaces where kids can freely socialize with peers in imaginative and fun ways; many kids extend relationships with existing friends by logging in and playing from their homes. Instead of calling one another on the phone, they play together online. Not only friendships, but also interests, values, and issues

of growing up are significant in kids' play in virtual worlds, extending from home, school, friendships, and hobbies. Yet there are also unique opportunities (or challenges, as the case may be) for kids playing in a digital playground rather than a physical one. What are the distinct dimensions of play in *digital* publics, and how do they connect to kids' social, ethical, and creative development?

The first and most obvious distinction is the huge size of this new digital playground. Kids meet and interact with hundreds, thousands, potentially millions of other kids.⁵ This teeming, populous digital public is unprecedented. Kids have always connected with different groups and communities, but virtual communities cross boundaries in ways that were not previously possible. What kinds of relationships develop when there are so many kids together in a digital space? What do kids reveal about themselves as they navigate relationships? What role does anonymity play, especially when kids are told not to divulge personally identifying information about themselves? Digital spaces are unique not only because of the sheer number of kids who socialize within them, but also because of the ways in which their socializing is mediated.

Virtual spaces have many features that shape how kids communicate and interact with each other, forming a second unique dimension of digital publics. Digital mechanics trace social connections and activities as kids interact, leaving "networking residue"⁶ through friend lists, gifts sent, messages left on profiles, even the ability to "silence" offensive others or make them invisible. Chat can be broadcast widely to large groups of people in a virtual room or whispered privately to an individual. Likewise, kid-designed digital objects, such as drawn avatar parts and written articles published in virtual worlds, raise interesting issues of ownership and copyright. Players might not be aware that their networking residues and contributions in the form of interactions, clicks, chat, messages, and designs are recorded by companies and searched, collated, and analyzed by those with access. This brings up issues of privacy, copyright, ethics, and quality of play.⁷

A third distinction is that play in the digital public affords unusual design opportunities for kids: ways to customize their appearances, "homes," and digital products in flexible ways not as easily available in the physical domain. Using digital paint and assembly tools, kids can create highly diverse types of avatars—online characters—and look like almost anyone or anything they want. They also have opportunities to create and customize

their own houses and online “bedrooms” with few of the physical limitations and costs of such construction. What kids make for themselves can often be produced and sold to millions of their peers, creating a massive audience for digital products. Although these design opportunities suggest an idealized space for a “second life” without prejudices or constraints, the claims that have portrayed the Internet as a sort of utopian realm have proven to be less than realistic. What kinds of design opportunities do virtual worlds offer, how do kids use them, and to what effect? Social pressures, design constraints, and difficulties with learning design tools all influence the degree to which kids take advantage of and learn to use design opportunities online. Further, despite a potential audience of millions, it can be difficult to draw attention to one’s creations.

Finally, a fourth unique dimension of digital publics is that they are designed spaces that are open to change. Perhaps more than other spaces we occupy, every object, surface, and even the mechanisms for talking, chatting, and looking certain ways were created. This means they can also be changed. These spaces and their interfaces are managed in many ways, from chat filters down to legal end-user agreements.⁸ All of the special affordances of networking, design opportunities, and a massive public in virtual communities are designed in regard to the freedom and constraints they give to players to realize these opportunities. In other words, many but not all of Zoe’s (bluwave) interactions and choices are preconfigured in both visible and less visible ways. Yet she and other players also use these designed worlds in ways both intended and unintended by their designers. Various cultural forces shape how designers design and how kids play with and within these designs. This last point merits particular attention because the design of virtual play spaces will influence kids’ opportunities for learning and personal growth in significant ways.

Play in digital publics has the potential to provide new forms to engage with others and creatively design for others, offering opportunities for social development, creative expression, and learning. Yet it is unclear whether and how this kind of play lives up to its potential. We need to understand how kids are engaging with others, to what degree what they are doing is new and different, and what new and/or familiar challenges they face. And we need to understand what it takes to get the most out of play in virtual worlds, and who is doing so. Then we can think more carefully about design features and situations of play that allow kids greater

opportunities for growing up. Like the slides and swings on neighborhood playgrounds, we want features and spaces to be safe for kids while leaving enough freedom for responsible play to provide engaging opportunities and challenges for learning. To address these competing demands, we need to look at virtual worlds from multiple connected perspectives that encompass considerations from developmental and cultural researchers as well as those from digital media scholars and learning technologists.

The Serious Side of Play

Play is fundamentally important for kids' development. The principal role of play spaces such as sidewalks, parks, and playgrounds, as well as activities with toys and games, is to promote social interactions between kids.⁹ We know that when they play with peers, kids are free to experiment with rules and design their own pretend scenarios or practices that set the stage for creativity and empathy. Power, recognition, fairness, sharing, morality, and friendship are all negotiated among peers at play. Furthermore, play is not cut off from everyday life, but rather extends from kids' experiences in home, school, and other social environments. Kids take values and rules from those spaces and "play" with them: trying out new scenarios, testing values, establishing morals, and coming up with creative new ideas.¹⁰ Indeed, many researchers have argued that children figure out social roles and learn to negotiate with each other as they navigate and define the rules of games. Put simply, peer play helps kids develop socially, cognitively, and culturally. To cut children off from peer play is to cut them off from one of the most essential forms of learning and innovating. So what do we need to understand and promote about playfulness among kids in digital publics?

To answer this question, we need to adopt a new perspective on play, one that values not only its developmental and cultural contributions but also its connections to learning and literacy in the opportunities for creative design and intentional reflection it offers in these digital arenas of play. We see play as a voluntary activity that kids engage in for pursuing their interests, experimenting with boundaries, and expressing themselves. We define play as interacting both within and outside the boundaries of these designed spaces. Thus, play is about conforming and experimenting with norms and values that have been designed into digital publics and those that are designed and put forward by players. Our definition of play

includes games of construction that psychologist Jean Piaget¹¹ saw as an essential but often forgotten part of development. We see play as a stepping stone for kids to develop important competencies that include social and design practices that they engage in across cultures. We argue that if one wants to understand and design play spaces in the digital public, one must first understand play. Such an integrative approach values the different contributions that various perspectives provide on play: understanding the individual player and developmental needs, understanding that players are shaped by cultural norms and practices, and understanding the designed and participatory nature of digital media.

Nowhere is this importance of various perspectives more apparent than in digital publics, which are constructed environments that embody ideas about players and their competencies but are also constructed through the interactions and contributions of players themselves. From a developmental perspective, we understand that play provides opportunities and challenges for kids to learn how to navigate new situations. From a cultural perspective, we understand that play is about learning the norms and values of a culture. From a media perspective, we understand that participation is not just about critical understanding but also about learning technical skills that support participation and contribution. One could argue that these playgrounds for millions are cultures of their own, distinguishable from their physical counterparts, but this would draw a distinction based purely on technical grounds. Rather, it is appropriate to understand children's play in the digital public as play that is occurring in a different context that might well have connections with their play in the physical realm.

Thus, to understand and promote play in the digital public means leaving behind academic boundaries artificially drawn around the study of play that focus either on developmental benefits, critical understandings, or technical skills alone.¹² Rather, it is about developing a more connected view of what anthropologist Marjorie Goodwin called "the serious side" of play when she studied jumping rope on playgrounds for its larger cultural relevance.¹³ The play we observed and studied in virtual worlds is not separate from kids' everyday lives; rather, it is an integral activity that exists across digital platforms regardless of where and how we study it. We can easily extend Goodwin's argument that "children may in fact discover how social order works through game participation"¹⁴ from jumping rope to avatars

engaging with others in the virtual activities such as teleporting and throwing mudballs. Like jumping rope, play in digital publics requires knowing how to *play* in a new domain, how to *play well* with others, and how to *play creatively*. To gain the benefits of play in massive digital playgrounds, kids need to know how to use digital tools and spaces, how to socialize with vast numbers of kids in conditions of relative anonymity that bring moral issues to the fore, and how to create with and push back against the designs of these settings. Below we elaborate on each of these ideas in turn.

Learning how to *play* in digital playgrounds is not as easy as it looks. To those unfamiliar with virtual worlds, it may seem as though everyone knows what to do and where to go. But a closer look reveals that participation in these sites is not equal—kids participate to differing degrees and in a variety of ways. Certainly we know that players exhibit stark differences: some play a lot and others hardly at all. What is less clear is the quality of their play. We also know that participation in virtual worlds does not seem to come naturally—at least not to everyone—and that players have to develop the competencies to marshal multiple resources across settings. Developing these competencies can mean various things, ranging from designing an avatar to look socially acceptable to knowing where to go to find others to play with. Sometimes it even involves learning new words, terms, and phrases to understand what others are saying. How kids learn to navigate digital publics is largely invisible. Many detailed ethnographies and reports describe the complexities of how adolescent and adult players learn to become members of massive online gaming communities, but it's really not clear how younger people navigate their equally complex virtual worlds.¹⁵ Thus, one of our goals is to illuminate how kids learn to be insiders in these digital playgrounds.

Using digital tools—and using them in culturally relevant ways—is vital to connected play in digital playgrounds. Participating involves a technical understanding of how to navigate interfaces, manipulate tools, and share content, as well as a cultural understanding of knowing how to do so appropriately. For example, learning how to make an avatar involves not only using tools for layering eyes, nose, lips, hair, and clothing, but also making the avatar look good to others. How many times did Whyvilians tell us that we looked ugly, even after we had spent hours working on our avatars' looks! Thus, although using technology effectively has often

been portrayed as a simple issue of access to computers and the Internet, Henry Jenkins more accurately describes these access issues as a “participation gap.”¹⁶ Learning the skills to become a full member of a digitally based community can be challenging, and there are different kinds and levels of membership. Kids need a variety of technical skills to become digitally literate or fluent, but often adults focus on the technical over the important cultural and social forms of participation required for full membership in online communities. This idea captures the full spectrum of what Mizuko Ito and colleagues have described as “hanging out, messing around, and geeking out.”¹⁷ Learning a range of participation practices—from socializing to manipulating digital tools to one’s own ends—is important for kids who are learning to play connectively in virtual worlds, providing important stepping stones into other digital publics.

Learning how to *play well* is another layer of connected play in virtual worlds. Beyond the technical or cultural ins and outs, it’s also important to know how to engage and socialize with others in a responsible manner in these massive, often anonymous environments.¹⁸ Virtual worlds, social network sites, and massively multiplayer games contain huge potential to support social and ethical learning. Where there are opportunities to interact with many different people, it’s easy to treat others poorly because we don’t know them, because they have no power over us, or because we will never see them again. In digital as well as other playgrounds, kids try out different actions and often hurt each other in the process. Yet not only in virtual spaces but in many areas of everyday life, our actions influence people whom we do not know. Can virtual worlds offer an opportunity to engage kids in learning to treat others with respect and stepping into others’ shoes?

A related issue concerns responsible play. We want play spaces to be safe places for kids to venture into and learn new things or simply have fun. Adults aren’t always around to monitor play. In fact, one important lesson of growing up means knowing what to do when someone is being physically or verbally abused.¹⁹ Many sites have various safeguards in place to prevent or respond to these kinds of issues: chat filters, chat selection menus, community monitors, emergency messaging tools. How do kids respond to different safeguards? How much can kids manage themselves and where do we need to provide support? How can we help kids connect values and morals from home, school, and communities to their interactions in virtual worlds? Answering these questions requires an in-depth understanding of the performance of play in digital publics and how kids

actually respond to safeguards, scenarios, and ethical dilemmas—information we provide in this book, which should inform the designs of digital playgrounds and guide those who work with the kids who play in them. This information is also of concern to the kids themselves, as we found out in our discussions with Whyvillians.

Finally, learning how to *play creatively* touches on design and agency in digital playgrounds. A significant aspect of creative play is captured in players' developing or designing content. In the context of virtual worlds, this might include giving players freedom to customize their avatars to reflect their real and imagined desires. Or a site might provide design tools that let players create and share their own avatar parts or design other objects such as houses, airplanes, cars, or even mini-games. Thus players have the ability to create content, allowing them to produce things that become a part of these digital playgrounds. Of course, thinking about what kids can create in virtual worlds means attending to the design tools and infrastructures for sharing content that shape what kids can make and how they can share things. Who is allowed to design things, and what do they design? How do the design tools and infrastructures shape what can be and what is created? How does the community respond to these designs? How creative are the designs themselves? One reason to attend to creative designs in virtual worlds is that these designed objects can be sites for witnessing connections between kids' desires, values, experiences, and their designed objects. What do kids choose to embody in their creative designs in virtual worlds, and what does this tell us about the connectedness of their play?

Another aspect of playing creatively concerns the level of agency allowed to kids in a digital public. One level of agency is how much freedom kids get to represent themselves online, for instance from choosing between preset characters to creating their own images. Yet we also need to consider agency in the context of understanding the design of the virtual community at large, for the simple reason that designs can make room for creative and expressive play. If one important aspect of play is trying out new rules, roles, and ideas, then how much does the design of a given world let kids do so? Game researcher Sebastian Deterding suggests that one important aspect of playfulness is benign transgression: playing with the rules and infringing on them, though not maliciously.²⁰ How much does the design of a given world let kids try out new rules, roles, and ideas? What forms of agency do kids exhibit, and how do these forms of agency help kids play with the designs and intentions of the virtual world?

Considering the design of a virtual world writ large also brings up what digital media researchers refer to as transparency. Transparency means making visible how online worlds are created, recognizing who has vested interests in them (i.e., who owns them or how they earn money), and understanding how and by whom messages are shaped. Here designers can think about providing access to data and tools that players could manipulate to gain further insights into their virtual play. How much insight do designers give into the inner workings of the virtual world? What does it mean when kids themselves have some role in the design of various elements of the virtual world? Do players take advantage of such creative opportunities, and if so, how? In what ways do these creative opportunities alleviate or reproduce social inequities online? In other words, we consider agency to be an issue not just of understanding and representing oneself online but also of understanding others and the world around us.

Many stakeholders, not just the players themselves, are concerned with the questions and issues presented here. Parents, educators, researchers, policy makers, and designers all have a growing interest in the opportunities that virtual worlds provide for kids. Businesses, certainly, have taken notice of virtual worlds as a growing market, and they are developing online worlds specifically targeted at children, often rife with advertisements and connecting toy purchases with play in virtual worlds. Educators and researchers are developing virtual worlds for kids with educational goals in mind, hoping to take advantage of the ability to design simulations and scenarios for understanding scientific ideas and to put design tools into the hands of kids themselves. Parents and teachers may wonder about these strange worlds and what opportunities or pitfalls they hold for their kids. Yet relatively little has been published on how kids play in these digital playgrounds. Commercial developers carefully protect their information on who is playing and how. Virtual worlds developed by nonprofits and educational researchers are small and few in number compared to their commercial counterparts. They are also often much more structured, meant to be used in conjunction with a school curriculum rather than as a space for free play. So how can we learn about kids' connected play in virtual worlds? Here we come to our investigation of a long-standing virtual world, Whyville (<http://whyville.net>). Whyville offered us the opportunity to be both observers and designers in a massive online world frequented by tweens.

Why Whyville?

Whyville now counts more than 5.6 million members and 40 million monthly page views.²¹ It bills itself as an informal science site where members can register for free, play science games to accrue virtual currency called clams that they can spend to accessorize their online representations (i.e., avatars), and socialize with others. We've already told you a little about Zoe and some of her everyday activities in Whyville, but that was only a sampling of the many things tweens do there.

Whyville contains dozens of science games, some of them collaborative, that Whyvillians can play to earn clams. Leveling up in games boosts the daily salary that players get when they log in each day. Bank accounts store information on daily income, purchases, certificates of deposit, and interest. Players spend many of their clams in a virtual shopping mall called Akbar's, which has over 30,000 avatar accessorizing parts ("face parts") of hair, lips, eyes, and clothes for any occasion—all designed by Whyvillians. In fact, regularly shopping for and accessorizing their avatars is among Whyvillians' favorite activities. Designing and selling face parts provides yet another form of income where players can own stores, advertise their goods, and evaluate production costs. The virtual trading posts allow for exchanges of face parts and the occasional scam. There are over a hundred different places to visit. Some are public and popular, like the City Beach where Whyvillians hang out and socialize; others, such as the Moon, are accessible only to those who know secret teleporting commands. Whyvillians read and contribute to an online newspaper, the *Whyville Times*, which has archived more than 10,000 newspaper articles published over thirteen years. Whyvillians can participate in elections, beauty pageants, proms, and other events, some designed by Numedeon, the company that hosts and owns Whyville, and many created by Whyvillians.

In our study of this virtual world, we eventually became Whyvillians ourselves, simply as a result of spending hundreds of hours there: accumulating clams, mastering science games, trying out different looks, even getting a loan for our first online car. We often marveled at what we observed, and for a time kept a blog called *Everything Whyville* to record and share our observations. We found out later that we were not the only ones to do so. Hundreds of Whyvillians also keep a public presence outside of Whyville,

sharing their insights of online life on cheat sites, which often include shortcuts to science games or tips on navigating the site, activities we discuss in more detail in chapter 5.

We had several reasons to choose Whyville to understand connected play. The first, as we've already noted, is its massive scale—its more than 5.6 million registered players make it comparable to larger commercial virtual worlds. To put Whyville's size into perspective, Habbo Hotel, the leader among virtual worlds (albeit for teens) counts more than 268 million registered members, with over 9 million unique users every month.²² Though more recent data are difficult to obtain, in 2009 sites directed toward children aged 6 to 14 advertised populations of 28 million (Club Penguin), 54 million (Neopets, with 128,000 monthly visitors), and 75 million (Pop-tropica).²³ All of these virtual worlds are owned by big media corporations such as Sulake (Habbo Hotel), Disney (Club Penguin and Toontown), and Viacom (Neopets). Though Whyville is much smaller than these corporate-owned virtual worlds, Whyvillians spend an average of three hours per month for a total of 5 million hours on the site. These demographics make Whyville one of the "stickiest" virtual worlds online, even when compared to its commercial cousins.²⁴

A second reason is the makeup of Whyville's player population, which counts players aged 8 to 18 years (plus some older players), with an average age of 12.3 years. This is an interesting and diverse age group in which players are fairly literate and still engaged in play, but with a growing interest in romantic relationships. It is a time when peers become a more important reference group. Kids at the early to mid-point of this age group, the tweens, sit between childhood and adolescence. As with any transitional stage, it is a short but intense life period with many challenges; much of what tweens do is aspirational, as they look forward to becoming more independent. Further, two-thirds of Whyville's players are girls. In 2002, when we started our research in Whyville, this was a unique feature; at the time, many people presumed that most girls were not interested in computers. Today, the differences in computer and Internet use between girls and boys have nearly disappeared, with the exception of video game play. Whyville was an early example of this trend. Moreover, although tween girls often opt out of science, they chose to frequent Whyville even though it billed itself explicitly as an informal science site.

A third reason is that Whyville is both a popular, free-time-based virtual world and a site with an explicit focus on education, particularly science

learning. Whyville started in 1999 as an outreach effort by Jim Bower, then a professor of neuroscience at the California Institute of Technology, and Jen Sun, who holds a PhD in neuroscience and served as CEO of Numedea. Science games and experiences form some of the core activities in Whyville. One such science experience is an innovative type of community game simulating a virtual epidemic that infects the community and gives players first-hand experience with studying an infectious disease outbreak. Combining science and free play experiences makes Whyville an unusual and interesting site, illustrating what relatively unstructured play in digital publics looks like and how it could be designed to engage players educationally. It also allowed us to design and observe our very own virtual epidemic—more about this in chapter 6.

Finally, the hosts of Whyville consented to collecting data and tracking players for extended periods of time (with players' and their parents' signed permission). This was uniquely important for understanding connected play. Though there are several excellent examples of careful ethnographies by researchers who spent extensive time in virtual worlds such as *Second Life*, *EverQuest*, and *World of Warcraft*, as well as studies that have analyzed substantial logfile data sets or surveys from thousands of players, these two modes of analysis have rarely been combined.²⁵ So far, researchers have not been able to connect careful observations online with the actual movements of players on a large scale. Whyville allowed us to do this by giving us access to the logfile data of hundreds of consenting players, a subset of whom we could directly observe in classes and an after-school club and indirectly observe when they logged on from their homes. Such a treasure trove of data let us get at some of the networking residue that is often hidden or not made accessible to researchers. Whyville thus provided a unique but promising case study of play in a digital public because we could connect the dots both online and offline, between players together in person and together (or alone) online in a massive community, and between activities in class and online discussions.

Our work took place over several years, with a preliminary study in 2002 and a very extensive study in 2005, followed by shorter interventions and observations in 2008 and 2009. Conducting research in a virtual world, especially one populated by minors, posed many interesting ethical and methodological challenges.²⁶ Most obvious were the significant age differences between the players and the researchers, which might also explain why up to now most of the researched virtual worlds and gaming

communities have been those populated by adults—players of roughly the same age as the researchers. Anyone can join Whyville and participate after a three-day waiting period—a feature set up by the company to discourage lurking.²⁷ In addition, we ourselves engaged in hundreds of hours of play online, becoming Whyvillians, though we were identifiable as researchers by our special Whyologist hats. Thus the first-person accounts so prominent in current research about online communities also informed our perspective and understanding as to what happened in Whyville.

We spent time on the site getting to know places, playing games, and working hard to create promising avatar appearances. Nonetheless, we stood out, and not just because of our Whyologist hats. Our avatar looks and chat lingo were clearly different from those of other players on the site. We had trouble completely fitting in with the trends of language and looks among tweens in Whyville. When directly approached, we explained why we were there. There were also public sessions in which we introduced research to recruit participants. In general, Whyvillians felt positive about our presence, though on occasion some would comment on our “ugly” appearance (see the acknowledgments). Many of them thought that our research would help Whyville become a better place, and they saw their participation in surveys as a form of community service; some even asked to join our research team. In a few instances, such as when visiting trading rooms, we were shushed when players felt we had interrupted what they considered to be private interactions. Yet there is no denying that for us, being in Whyville was like being in a different world, whereas our club participants seemed to join the virtual community more seamlessly after an initial period of exploration.

Though our presence was not hidden, some of our research was not directly visible to Whyville players. Most notably, the logfile collection continued silently over six months (though players and their parents had been informed and had given their signed consent). Given the long time frame, three months in the club and six months online, it is easy to understand that players would simply forget after a while that every mouse click and chat line was being recorded,²⁸ potentially analyzed, and linked with other sources. The logfiles were recorded twenty-four hours a day, seven days a week, from January to June 2005. We thus captured play on evenings and weekends in addition to the school-day play simultaneously observed in the classes and the after-school club. We saw instances of inappropriate

chat and scamming²⁹ that otherwise might not have been visible to us (see chapters 4 and 5). And we know from the debriefing interviews that we conducted with club players that they chose not to mention their often extensive flirting and cheating, perhaps because they didn't consider it socially desirable, even though these were widespread activities among Whyvillians.

We also connect online and offline play, and intentionally so, because transitions were often seamless. How often did we watch a dozen tweens in the club logging in to Whyville and shouting out to each other across the room when their avatars met on the screen or teleported together to the Moon for mudball slinging! By the same token, we equally often observed instances when club members would not recognize each other online and say to each other with a puzzled look on their faces, "That's you?!" Through our observations, online and in the club, we were able to generate more connected accounts of play as we followed players or, sometimes, particular practices such as learning the secret command of teleporting. Have you ever wondered how players find out about such secret commands? Insights such as these, small in nature but large in impact, capture and connect play and learning in the digital public.

Book Overview

In this book, we provide a detailed portrait of connected play in the virtual world of Whyville that touches on the universal themes of knowing how to play, and doing so well and responsibly, with others in the digital public. Several audiences have a growing interest in understanding the opportunities and challenges associated with connected play. Educational and developmental psychologists will be interested in the dynamics of tweens' play in virtual worlds and how issues like identity, social development, romantic relationships, gender, and ethics are woven into their activities. Parents and educators will attend to the opportunities for learning that can be built into these worlds and how best to shape and scaffold these opportunities through interactive play in clubs, classrooms, and home environments. Digital media scholars will appreciate our attention to young adolescents, or tweens, a population generally left out of most literature on young people's use of digital media. They will also be interested in the multimodal methods we've developed to study kids in digital sites of play as well as the practices of creative design that kids use in virtual worlds. Finally, developers of

online social media will learn about some of the ways to take advantage of kids' abilities and interests in large-scale digital environments, with implications for designing such environments for "stickiness" and interest.

Chapter 2 takes us deep into the heart of Whyville to reveal the inner lives of tween players. We follow the digital footprints of tweens in Whyville, drawing on our unique access to track the movements and interactions of over 500 tweens for a period of six months, coupled with observations captured in video records, field notes, and interviews with some of the players in after-school clubs and science classes. We begin by describing a typical day in a virtual world. This simple step is important because much of what we know and hear about virtual worlds focuses on a few highlighted and sometimes problematic incidents that fail to capture the larger range of activities in which tweens actually engage. We then proceed to recount one girl's changing patterns of participation in Whyville and how those matched larger trends on the site (and, by extension, in other virtual worlds) as well as how they connected to other areas of her everyday life. We end with descriptions of play that crossed the boundaries of Whyville and school friendships from an after-school club. Such access to the intimate details of online life is rare, and it gives us multiple perspectives on Whyville, from the broad trends of hundreds of players, across social interactions between friends in a computer club, and within one player's developing life.

Chapter 3 examines identity play in the context of avatar design and how issues of race, gender, and personal expression become apparent through designs and discussions as tweens create their online representations. Few topics about being online have received more attention than developing an online persona, as this has often been portrayed as an opportunity to be anyone one wants, to have a "second life." Yet in Whyville, how kids choose to look is an intricate decision based on self-reflection, the choices available to them, and social pressures. Design choices provoke conversations about gender, race, disguise, and personal tastes. They reveal social pressures and cultures in Whyville. One subsection in this chapter, "Blacks Deserve Bodies Too," introduces how kids in Whyville dealt with inequities of representation in their avatars, especially when they were the ones producing (and reproducing) racial disparities in avatar parts. Designing avatars brings to the fore issues about what tools and parts are available to represent oneself and how tweens represent themselves over time.

In chapter 4, we take a closer look at the social play that drives most of the interactions among tweens in virtual worlds, whether they're hanging out on the virtual beach or teleporting together to the depths of the solar system. This chapter is very much about the social connections that played out between kids in Whyville, across school, home, and other spaces, between friends and strangers, and with the opposite sex. We draw on surveys from hundreds of Whyville players who talk about their experiences friending others online, in addition to our observations from logfiles and in-person club interactions. The section entitled "Valentine Games" is a unique introduction to the world of flirting and dating in Whyville and how tweens experiment with romantic relationships. Much of this flirting is anticipatory and not fully realized—who, after all, can call dozens of other players "girlfriend" or "boyfriend" after just a few chats? Nonetheless, anticipatory flirting is a frequent part of new activities seen as an essential aspect of growing up. We know that for tweens in particular this is a sensitive and awkward time where clear lines are drawn between boys and girls playing together or apart. If it's true that social networking technologies, including virtual worlds like Whyville and Second Life, are becoming the architects of our intimate relationships, then paying attention to how tweens relate to one another in a virtual world can help us design places where social play and experimentation are safe and open.

In chapter 5 we turn to kids' playful testing of ethical boundaries in virtual worlds. In particular we consider "boundary play" in the broad context of cheating, a practice often condemned in society but commonly accepted and even recommended in gaming. On one level, cheating takes kids beyond the actual boundaries of virtual worlds on hundreds of sites maintained by kids to construct and share cheats, that is, shortcuts to science games and tips on insider knowledge of virtual cultures. A surprising but insightful upside of this type of cheating is that it informs designs of good educational games: games that require only simple cheats do not provide rich opportunities for learning, whereas those that involve complex cheats move beyond just memorizing facts and require cheaters and players alike to engage in deeper, often collaborative inquiry. A broader view of cheating raises ethical issues ranging from relatively benign transgressions of designers' intentions to outright scams of other kids. In our subsection entitled "Stealing from Grandma," we share Whyvillians' open discussions of this central part of digital life in the *Whyville Times*, as they debate the

ethics of cheating games, cheating players, cheating in elections, and cheating on virtual boyfriends. Against this backdrop, we discuss the short-lived scams of two of the more intense players from the after-school club. Playing with boundaries raises provocative discussions of ethics and learning and provides a fruitful context to consider how to engage kids in learning to play thoughtfully and creatively.

Understanding connected play is an essential precursor to understanding designs for learning in virtual worlds. In chapter 6, we study the design and outbreak of WhyPox, a virtual epidemic, as a context for learning about infectious disease in clubs and classrooms. With the disappearance of many childhood infections, few children have direct experiences with epidemic outbreaks other than reading or hearing about smallpox epidemics in the past or bird flu outbreaks in Asia today. However, simulating epidemics in virtual worlds can give kids effective and instructional experiences for understanding infectious disease, engaging them in complex problem solving and collaborative interactions as they investigate the causes of the epidemic. Virtual epidemics, a type of what we call community games, draw together principles of effective games while also engaging whole communities of kids in the experience safely. They can also easily link to broader classroom investigations of infectious disease, allowing them to connect experiences and investigations in the virtual world with science learning in classes or clubs.

In chapter 7, we examine design opportunities for play and learning in virtual worlds. While toys and playgrounds have a long history of being designed for entertainment, education, and children's safety, players themselves often design virtual worlds, especially their content. What does it mean to design opportunities for play and learning? We review the opportunities for creative and expressive play in virtual worlds, realizing that the level of avatar-customization features in Whyville is unique compared to the canned features in many commercial virtual worlds. Next, a case study of how a collective of Whyville players worked on developing a cheat to a new science game provides a compelling illustration of how cheating can be good for learning. Finally, we consider how to design for connections across spaces like clubs, classrooms, and other virtual sites and how to support constructive play that emphasizes the creative potential of youth.

In the final chapter, we turn to the future of play and draw conclusions from what we have learned about connected play in virtual worlds. These

lessons have ramifications for how we think about the design of digital experiences in other types of virtual communities for kids. Relatively simple changes illustrate how, even in Whyville, we could design for greater levels of agency for players to enrich their engagement and learning. In particular, we discuss virtual worlds that are more design oriented, where kids are given tools to contribute original content that requires multiple levels of technical and social competence. Chapter notes are included at the end of the book for those interested in following up with further readings; in particular several of our papers that examine the topics discussed in the book provide greater detail. Research notes provide a more detailed account of how participants were recruited and how the data were collected and analyzed.

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