Videogames, Libraries, and the Feedback Loop

Praise for *Videogames, Libraries, and the Feedback Loop*

Abrams and Gerber masterfully illustrate it is no longer a question of whether gaming-driven learning practices *should* be included in literacy learning spaces such as libraries, but rather *what's taking us so long* to provide these opportunities to all youth. The Feedback Loop Framework and the multi-iterative ways learners evaluate and reflect on their own learning experiences has tremendous implications not only for the fields of gaming and libraries, but also the very ways we consider youth meaning making in traditional learning spaces. The youth will show us the way, they always do; we just need to be prepared to trust and follow. Abrams and Gerber show us how.

—**Shelbie Witte**, Ph.D., Kim and Chuck Watson Endowed Chair in Education, Oklahoma State University, USA, author of *Text to Epitext: Expanding Students' Comprehension, Engagement, and Media Literacy*

Videogames, Libraries, and the Feedback Loop, by Sandra Schamroth Abrams and Hannah Gerber, is an extremely useful and revelatory read that describes how libraries and librarians can foster learning and discovery through videogame play. It's useful in the sense that librarians and, actually, educators, in general, can take lessons learned from the authors' examination of what sorts of learning and meaning making come from the use of videogames in supported learning spaces. Central to how the learning is examined is this concept of the feedback loop—a set of real-time indicators and signifiers that players interact with that helps them understand their place in a game and make strategic decisions on how to proceed. Chapter 2, which covers the feedback loop is crucial reading for anyone designing learning spaces that focus on iterative and interest-driven experiences (aka the I^2 approach covered in Chapter 5). Indeed, the book and the feedback loop lens are a revelation for me (an instructional game designer turned professor) as I think about engaging course design and my role as a co-learner/explorer with my students in a higher education environment that was forced to shift to online instruction! This detailed account of how learners engage with videogames with collaborative support is very timely and I cannot recommend this book enough.

—**Mark Danger Chen**, Ph.D., Lecturer, Interactive Media Design, University of Washington Bothell, USA, author of *Leet Noobs: The Life and Death of an Expert Player Group in World of Warcraft*.

Drs. Sandra Abrams and Hannah Gerber provided a detailed look at implementing videogames programming in libraries. Drs. Abrams and Gerber bring extensive experience in research on videogames and youth. This book offers insights to both researchers and practitioners for how to implement a videogame program but also what those programs can provide to youth who are participating, beyond just playing a videogame. The framework of a feedback loop that Drs. Abrams and Gerber present, although a well-known concept within videogames, provides those offering videogame programming in libraries a much needed way to assess their programs and determine success. Whether you are offering your first videogame program or you are a seasoned pro, this book offers new insights for everyone.

—**Crystle Martin**, Ph.D., Director of Library and Learning Resources, El Camino College, California, USA, author of *Voyage across a Constellation of Information: Information Literacy in Interest-Driven Learning Communities*.

Videogames, Libraries, and the Feedback Loop: Learning Beyond the Stacks

BY

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INVESTOR IN PEOPLE

To my family, who help me explore limitless learning – *Sandra*

To my nephews, who show me that life is an ever-expanding universe of play – *Hannah*

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Abbreviations

AI	Artificial Intelligence
AR	Augmented Reality
ESRB	Entertainment Software Ratings Board
GPS	Global Positioning System
IRB	Institutional Review Board
MMOG	Massively Multiplayer Online Game
MOBA	Multiplayer Online Battle Arena
NGO	Non-Governmental Organization
NPC	Nonplayable Character

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About the Authors

Sandra Schamroth Abrams, PhD, is Professor of Adolescent Education in the Department of Curriculum and Instruction at St. John's University in New York. Abrams's investigations of digital literacies, videogaming, and technology integration explore layered meaning making and agentive learning. As she focuses on the intersection of digital and nondigital literacies, what comes to the fore is the powerful meaning making that exists in, across, and through the blurred boundaries of these spaces. Her work has been featured in leading research journals, including *Teachers College Record, Journal of Literacy Research,* the *Journal of Adolescent & Adult Literacy, Language & Linguistics,* and *Educational Media International*. She is the author of *Integrating Virtual and Traditional Learning in 6-12 Classrooms: A Layered Literacies Approach to Multimodal Meaning Making* (Routledge), co-author of *Conducting Qualitative Research of Learning in Online Spaces* (SAGE), *Managing Educational Technology: School Partnerships and Technology Integration* (Routledge), and *Writing in Education: The Art of Writing for Educators* (Brill). She is the co-editor of *Bridging Literacies with Videogames* (Sense/Brill) and *Child-Parent Research Reimagined* (Brill). Abrams is the recipient of the 2019 USDLA Distance Learning Quality Paper Award for the article, *Gamification and Accessibility*. Abrams was a finalist for the AACTE Outstanding Book award for *Integrating Virtual and Traditional Learning in 6-12 Classrooms: A Layered Literacies Approach to Multimodal Meaning Making* (Routledge), and she received an AECT journal article award for her research on peer review and power structures in online spaces. Abrams's work also has been featured in mainstream media, such as *Edutopia, The New York Times, Tech Times, Parents Magazine, and THE Journal*. Furthermore, Abrams has served as a Technology Consultant and Assessment Coordinator for a number of projects, including a New York City Department of Education Award: Learning and Technology Grant. From 2018 to 2020, Abrams was the Program Chair for the American Educational Research Association's Media, Culture, and Learning special interest group. Abrams serves on a number of journal editorial boards and is an Associate Editor for the *International Journal of Multiple Research Approaches* and a founding co-editor of the Gaming Ecologies and Pedagogies book series (Brill).

Hannah R. Gerber, PhD, is Professor of Literacy at Sam Houston State University and an Honorary Professor in the Department of Language Education, Arts, and Culture at the University of South Africa. She is the President

of the International Council for Educational Media, one of the oldest organizations in the world dedicated to educational media (circa 1950). A former high school English teacher, Gerber's research focuses on youth culture and digital practices, particularly adolescent videogaming practices and the literacy experiences that are developed within. Gerber's work has won multiple research awards; recently, she was awarded the "Divergent Award for Excellence in 21st Century Literacies Research" (2016) an award given to "recognize the indelible contributions of educators and scholars who have dedicated their careers to the theoretical and practical study of 21st century literacies." Additionally, she is a two-time recipient of the Sam Houston State University College of Education Faculty Excellence in Research Award (2014 and 2020). Gerber has given over a dozen keynote addresses at national and international conferences across five continents. Furthermore, her research has been discussed in mainstream media venues, such as *Wired Magazine*. With more than 80 published works to date, she has co-authored five books including most recently, *Conducting Qualitative Research of Learning in Online Spaces* (Sage). Her most recent research can be found in top peer-reviewed journals such as *Journal of Adolescent and Adult Literacy*, *Tech Trends*, *The Qualitative Report*, *Educational Media International* and *English Journal*. She is an Associate Editor for the *International Journal of Multiple Research Approaches* and a founding co-editor of the Gaming Ecologies and Pedagogies book series (Brill). She is passionate about mentoring new academics and burgeoning scholars in the field of digital literacy and she enjoys engaging doctoral students in critical and creative inquiry that will further the field of digital literacies and digital methods.

Preface

Does your library have videogame programming? Would you like it to have one? What if you learned that the principles of feedback in videogaming could strengthen youth programming at your library?

Videogames, Libraries and the Feedback Loop: Learning Beyond the Stacks is a resource for anyone interested in offering, supporting, refining, and/or simply expanding understandings of library-based events and programming designed specifically with youth videogame play in mind. This book stems from our own interests in and research of videogaming and learning, which helped us to develop our understanding of *the feedback loop*, or the ways players receive information so they can manage their own learning and actions. As education researchers who have spent a great deal of time in public libraries observing and examining videogame play, youth interaction, and library youth programming, as well as observing countless youth taking part in videogaming activities in a variety of out-of-school spaces – from homes to community spaces – we perceive the undeniable value of such interaction and agency that videogaming affords. We build upon these noticings of youth participation and decision making as we write this book and, knowing that videogames and technology can and will change, we integrate examples of current and vintage games to demonstrate our points and ideas to a range of audiences.

Throughout this text, the word, videogames, is singular because we agree with the *The Videogame Style Guide and Reference Manual's* call for greater accuracy and consistency when using the term (Thomas, Orland, & Steinberg, 2007). Orland (2007) suggested that the evolution of the two words into a "one-word cultural idiom" (p. 6) can be indicative of the evolution of the field, underscoring that "a one-word option denotes an established concept, whereas two words simply reference parts of a whole" (Abrams, Merchant, & Rowsell, 2017, p. 4). Furthermore, although we note our observations of nondigital gaming inside and outside the library spaces we visited, we use the terms "videogaming" and "gaming" interchangeably. Whenever we specifically discuss nondigital gaming, we identify it as such.

Because this book is an extension of our previous work on authentic meaning-making experiences that occur within videogame environments, we recognize the multiplicitous and multidimensional ways that one can make meaning in, around, and across videogame spaces. We acknowledge and honor the fact that no two learning experiences are the same, and we advocate for library programming that builds upon youth input and responds to youth needs, even when social

distancing complicates traditional gaming setups; this includes, but is not limited to, rethinking and extending library-based videogame networks, thereby enabling youth to play videogames together in and beyond the brick-and-mortar library space. Additionally, this ethos informs a typology we have developed based on our research in and around library videogame environments. We call for collaboration between youth and librarians that stems from, what we call, an I^2 (iterative and interest-driven) approach that can innovate and refine new and existing library videogame programming.

The examples offered in this book are just that – examples of how gaming and learning work in tandem through an iterative process that we call the feedback loop. The ideas offered in this book are meant to be tweaked, modified, adapted, and changed to fit one's own unique situation. Additionally, we place technical terminology in bold and provide a glossary for those words. We recognize that meaning making within and around videogames is diverse, nuanced, and personalized, and we offer research-based, practical ideas to librarians as they embrace and/or integrate youth videogame programming at their libraries.

Foreword: Community

Teri S. Lesesne

It is never easy to be the youngest in the family. Our youngest granddaughter had to wait two years to get her own library card. Even though she had access to books at home and school, even though we would buy her books when she asked, there was something more significant about having her own card, the card that gave her membership in what Frank Smith terms "the literacy club" (Smith, 1987). So, on the morning of her fifth birthday, we drove to the library to obtain that entry card. We have a photo of her standing in the stacks clutching the simple plastic card with her name printed on it (they let her print her name, too!). She is not surrounded by presents or cake or family and friends. Books surround her, and the expression on her face tells it all: she has found her community.

Community is the word that kept appearing in my notes as I read this remarkable book. Smith called it a "club," but the public library takes that club and extends it into a community by combining many different aspects of literacy, many different members of the club, and many elements of the larger community served by the library. Make no mistake; the library is a community within a larger community. Think about how libraries become more than book repositories, especially during some of the darker moments in their neighborhoods. They become a place of light and safety when communities are devastated by disasters; they become a haven for people who have been displaced by tragedies. Everyone is welcome.

The inclusion of videogaming in the public library is one more example of how libraries create and support and encourage communities within their buildings and even in virtual spaces outside of the brick and mortar. These spaces are not just an area set Aside. They are not maker spaces. They include more than an area of space; they consider the needs of the community regarding placement (put the videogaming area in the children's section and perhaps lose members who do not wish to be identified as "kids"). The area is not just measurement. How should the design of the space be constructed to achieve the ultimate goal: redefining and supporting new literacies? How can all this extend beyond the building to the larger world of the Literacy Club? Abrams and Gerber explore these questions and dimensions in a book that should be required reading for those seeking to become youth librarians, to those seeking to work with teens and tweens and technology, and with those teachers seeking to create a community of learners who explore many different modalities.

Practical and, yet, grounded in pedagogy, research-based and, yet, totally accessible by all readers, this book joins those early books on literacy such as the aforementioned *The Literacy Club* by Frank Smith. It will join other titles about spaces, about services, and about honoring service to tweens and teens. It belongs on that critical 5 ft. professional shelf alongside the 16 years of accumulated wisdom contained within those books.

A final note, our youngest granddaughter has a new library card. She now belongs to the public library in her new residential neighborhood. Her community is different, but the reasons to belong, to be a part of it, remain the same. How many of us could reach into our pockets and wallets right now and pull out that valuable membership card?

August 2020
Conroe, Texas

Reference

Smith, F. (1987). *Joining the literacy club: Further essays into education*. Portsmouth, NH: Heinemann.

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Finally, we thank our families and colleagues who were instrumental in supporting our efforts in writing this book, which evolved over time with iterative writing and thinking. Thank you for your continued support, encouragement, and understanding.

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Chapter One

Introduction

This introductory chapter discusses the importance of studying youth videogaming activities in library spaces. In this chapter, we look to existing research of library videogame programming, and we call attention to the feedback loop, which promotes in-game advancement and iterative meaning making. An overview of two foundational theoretical concepts – constructivist and sociocultural theories of learning – helps to explain how gamers' meaning making occurs through the feedback loop. Finally, we close with a general sketch of each chapter in the book.

Two youth, Davis and Billy, converse in low voices about the best character to select for PlayStation All-Stars Battle Royale, a videogame in which players assume the roles of popular characters from various PlayStation franchise games.

Billy exclaims, "Nope, seriously, you are crazy. Ratchet is the best one to play. He heals faster. Go ahead and play Kratos. You may deal more damage than me, but I will be able to move out of the way faster, so you have to be able even to hit me first."

"Uh huh," murmurs Davis, "that is what you think."

Meanwhile, two other youth, Carlos and Jeri, wander up and start to engage in a conversation with Davis and Billy about which character is best to play. Clara, who is sitting at a nearby computer, overhears the conversation. Wanting to provide information to the players, Clara pulls out her mobile phone and searches the PlayStation All-Star Wiki; she begins to list aloud numerous statistics (e.g., health, damage, and the recovery/rebirth rate) for each character within the game. As Davis and Billy start their match, they announce

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> *the character they selected and support their decision with some of the statistics and reasons that Carlos, Jeri, and Clara had noted. Davis and Billy continue to play the All-Star Battle Royale game, and Carlos, Jeri, and Clara remain as onlookers who interject various anecdotes, facts, and exclamations.*

This example might seem common to many who have overheard or seen youth playing videogames, and it represents the types of interactions and meaning making we have observed in public library spaces in the northeastern and mid-south United States. It was from interactions, such as these, that we began more closely investigating how and why videogamers were making meaning, in general, and in library spaces, in particular.

Although videogame playing in libraries might seem like a foreign concept to some, the scenario above is quite common in libraries that support videogame playing. In fact, despite the sluggish uptake of videogames in public libraries (Abrams & Van Eck, 2019), the inclusion of videogaming activities in public libraries, school libraries, and academic libraries has been gaining nationwide momentum within the past decade (Adams, 2009; Courtier & DeLooper, 2017; Gallaway, 2009; Levine, 2006, 2008; Neiburger, 2007; Nicholson, 2009, 2010; Thomas & Clyde, 2013). As more and more librarians across the nation continue to (or look to) integrate videogames into their youth programming, it is important to examine how youth play, how they make meaning, and how they negotiate their learning within these spaces. Doing so supports an understanding of a medium that not only can contemporize youth library services by attracting countless youth to partake in library programming, but also can engage youth in iterative and agentive learning. In other words, through videogaming, youth continuously reflect on their thinking and refine their ideas, all the while assuming ownership of their learning processes. *This learning is supported by, what we refer to as, the feedback loop.*

The **feedback loop**, as we conceptualize it, is an iterative system of four main features in and around the videogame that offer the player essential information: (1) objectives and rules (i.e., how and why the game is played), (2) progress bars (i.e., real-time information about progress), (3) in-game maps (i.e., visuals of a player's in-game location), and (4) leaderboards (i.e., post-game scoreboards). Although each of the four entities has its own purpose, no one feedback loop feature is privileged; rather, the integrated system works vis-à-vis the interplay of its components. After all, progress bars and in-game maps have little meaning without the context of objectives and rules; leaderboards that showcase the final tally often motivate players to improve performance, and, thus, the players look to real-time information from progress bars and in-game maps to achieve objectives; and in-game maps help players to navigate within the game, and successful navigation will lead to sustained "lives" and progress.

Although these examples might oversimplify the complex and integrated nature of the feedback loop, they highlight how the four features work in concert to provide players the information they need to play the game. Youth often succeed in games by anticipating, interacting with, and responding to each of the four features individually and as a feedback system. This book offers a window into youth meaning

making in library videogame spaces, and we use the feedback loop to frame this discussion of iterative learning that takes place in and around videogame play.

After all, in videogame play, feedback loops enable players to (re)assess their progress; youth reflect on their progress in-game *and* post-game, and such self-assessment is crucial to decision making and mastery development. As scholar James Paul Gee (2012) explained, and videogames research confirms, assessment in games involves

> (1) problem solving, (2) the quality of one's choices and decisions across time in terms of their short– and long-term consequences, and (3) preparation for future learning, that is, how well the player is prepared to go to the next harder level, not just what the player has mastered in the level. (p. xix)

These types of assessments are critical to youth engagement in interest-driven, reflective, and iterative learning experiences that often are achieved through the feedback loop (Abrams & Gerber, 2013). Addressed in greater detail in Chapter Two, the feedback loop is an important framework that promises to help readers within and beyond the Library Sciences field to consider enhancements to and refinement of youth videogame programming and meaning-making practices.

Furthermore, although library videogame programming typically has been situated in the brick-and-mortar library building, the feedback loop and its implications and applications for youth meaning making, in general, and library programming development, in particular, can be extended into **remote situations** wherein the library, via the Internet, remains the hub for youth interaction *and* supports equity and access to videogame play. We recognize that remote situations often privilege youth patrons who have reliable Internet access, and, even in the third decade of the twenty-first century, there are people in rural, underdeveloped, and impoverished areas of the world in which Internet access is nonexistent or unreliable.

When we discuss videogaming in remote situations, we envision a number of possibilities for all librarians and patrons, regardless of their geographic location or context. First, satellite-based Internet can offer a temporary and portable solution to those without immediate installation of cellular towers or hardwired Internet access. Second, the check-out method of **videogame hardware** (e.g., consoles, controllers, cables) for non-Internet game play is another viable option that we have witnessed youth take advantage of at various libraries. Despite the possibilities these two options offer, we recognize that there are limitations. Satellite Internet is not yet cost effective and notoriously has horrible ping time[1]

[1]Ping time is the amount of time it takes for information and data to travel from the base station access point to the satellite and back down to the base station access point on Earth. As satellite Internet relies on data transfer pinging off the satellite and back to Earth, this often has a negative impact on multiplayer gaming scenarios, such as **massively multiplayer online games** (MMOGs), wherein fractions of a second dictate wins and losses. We suggest the use of satellite versus cellular data in rural and

for any multiplayer gaming, and checking out gaming hardware without Internet connectivity will not fully support youth engagement in *remote* (e.g., not physically next to each other) collaborative gaming activities. Although we recognize that these options for collaborative gaming do not mitigate the issues of equity and access, nonetheless, both ideas provide gaming opportunities to youth who do not have consistent or affordable access to Internet, data plans, or videogame hardware. Furthermore, it is our sincere hope that, by calling attention to equity and access issues and opportunities, readers will consider the far-reaching implications and applications of library-based youth videogame programming.

Following the discussion of the feedback loop – what it is and how it works – in the first half of this book, we offer practical ideas for building upon the four features in digital and nondigital ways, and we address how the feedback loop can sustain and promote youth interaction when circumstances require remote socializing.

Why We Wrote this Book

As educators and education researchers interested in learning about youth meaning-making experiences in, through, and across digital and nondigital videogame spaces, we initially were intrigued to see many librarians promote videogame programming in their libraries. We have met with librarians who are interested in learning more about videogames and youth learning, as well as those who skeptically wonder why videogames should be included in library programming. We have spoken with librarians who are gamers; who are interested in supporting youth-driven practices; who are hesitant to promote videogames; who are uncertain why videogaming should be embraced; and who might not fit into any one of these categories but, overall, show concern about and interest in videogame programming.

Eli Neiburger's (2007) well-known book, *Gamers . . . in the Library?! The Why, What, and How of Videogame Tournaments for All Ages,* helped to support many librarians looking to initiate and maintain videogame programming at their libraries. Now that some libraries currently offer or look to offer videogame programming, another book – one that draws upon research of videogaming in public libraries to provide insight into gaming and learning – is needed to support librarians in developing, reconceptualizing, and reinvigorating youth programming. More specifically, we contend that videogaming inherently involves important reflective and iterative practices, and, by examining and understanding ways that the feedback loop can help youth develop and make sense of their practices, librarians can help youth hone their meta-awareness of such meaning making, even as

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remote situations because, at the moment, satellite Internet by its very nature can be more accessible than cellular data. However, a clear and unobstructed view of the sky is needed for satellite access to be available and consistent. In fact, multiple nongovernmental organizations (NGOs) work to deliver portable satellite hubs to rural and remote areas around the world to ensure Internet access for populations without Internet access (see also USAID-funded project CyberTigis, as well as UN SDG 4 on Educational Equity; United Nations Foundation, n.d.).

librarians find ways to develop their youth videogame programming. *Videogames, Libraries, and The Feedback Loop: Learning Beyond the Stacks* takes up this work.

Why Videogames and Why Libraries?

Across the nation, youth are finding technology-oriented outlets for expressing themselves; one such ubiquitous outlet is videogame play (Anderson & Jiang, 2018; Center on Media and Child Health, 2019; Lenhart, Smith, Anderson, Duggan, & Perrin, 2015). Understandably, youth gaming and the topics of some videogames have prompted concern about the ways that videogames – especially popular shooter games and others that involve violence – might affect youth.[2] Research repeatedly suggests, however, that whereas violent videogame play is not recommended for individuals predisposed to violence, videogames themselves are not *the specific reason* people are violent or that they commit crimes; antisocial behavior noted in early research is a "phantom" effect of videogame play in that it does not exist (Zendle, Kudenko, & Cairns, 2018, p. 27). Research indicates that videogames "whether violent or nonviolent, have minimal deleterious influence on children's well-being" (Ferguson, 2015, p. 655), and violence in videogames does not lead to increased aggression (Dowsett & Jackson, 2019). Furthermore, violence in videogames is not something that transforms every person's behavior; other psychological factors play a primary role in shaping behavior (Newman, Fox, Roth, Mehta, & Harding, 2005). With that said, we acknowledge that videogaming is a popular and prevalent contemporary practice with controversial media attention.[3, 4] Our research suggests, however, that videogaming principles

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[2]To understand these controversies, one need only to turn to media reports and news-sponsored opinion blogs that link videogaming to acts of violence. Katie Couric's website, Katie: Talk that Matters (http://www.katiecouric.com), for instance, features videos and articles with titles, such as "Are Video Games to Blame for Violent Crimes?" "Signs Someone You Love has a Video Game Addiction," "How a Video Game Addiction Led Daniel Petric to Murder," and "Are Video Games Ruining Your Life?" These and comparable stories highlighting tragedies and situations in which sociopathic gunmen have played videogames, give us reasons to pause and to investigate the importance of mental health and how quickly the media look to blame videogames for something that might not be causally related.

[3]The World Health Organization (WHO) included Internet Gaming Disorder 2013 and Gaming Disorder 2018 as mental health conditions and, in 2020, the WHO promoted games as a safe way to connect (Canales, 2020). Although Gaming Disorder only affects a "small proportion" of gamers, it has caught the attention of many news outlets, and it continues to be seen as a controversial classification (Sarkar, 2018), especially in light of COVID-19, when videogaming has been associated with stress reduction and social interaction (Kowert, 2020).

[4]Videogames are not the first form of media to spark moral panic. In the eighteenth century, Goethe's novel, *The Sorrows of Young Werther*, was blamed for a host of suicides, suggesting that reading too much, especially reading the wrong text, could lead readers to kill themselves (Furedi, 2015).

and practices can be used to support and advance youth videogame programming in public libraries despite controversies about the medium.

Videogames have rich, **multimodal** environments that encourage critical thinking about and interaction with diverse modes (e.g., images, sounds, movement, texture), storylines, concepts, and practices that exist across the online and offline gaming spaces. Videogaming and game-based activities in and beyond the library also have encouraged youth to partake in practices related to civic engagement (Abrams, 2015, 2017; Gerber & Gaitan, 2015, 2017; Hollett & Ehret, 2016; Kahne, Middaugh, & Evans, 2009; Lenhart et al., 2008); to develop passions for and understandings of history (Abrams, 2009a, 2009b; Squire, 2005), literature (Abrams, 2009a, 2009b; Gerber, 2009; Gerber & Price, 2011; Stufft, Abrams, & Gerber, 2016), math (Abrams & Russo, 2015), and science (Barab et al., 2009); and to engage in interest-driven practices (Abrams, 2009a, 2009b, 2010, 2012, 2015; Gerber & Abrams, 2014; Hollett, 2016; Kafai & Fields, 2013). In our multiple studies of youth gamers, for example, we have found that their videogaming is not limited to *playing* a videogame; rather youth are creating and engaging in new material related to their game play, echoing scholars' observations that gaming engages players in active, critical knowledge development (Abrams, 2009a, 2009b, 2017a, 2017b, Apperley & Beavis, 2011, 2013; Apperley & Walsh, 2012; Burwell & Miller, 2016; Gee, 2003/2007; Gerber, 2008, 2017). Furthermore, players not only engage with the videogame on the screen, but also they act out game scenes and physically respond to the videogame beyond the screen in nondigital environments (Abrams, 2011, 2012, 2015).

The movement to include videogames in the library recognizes how games can be important tools for learning. Playing videogames is an important literacy practice that some libraries have acknowledged, including the National Library of France, which, 15 years ago, defended videogames as "document[s] and … object[s] for scientific research" (Kirriemuir, 2006, p. 64). The examination of videogaming in libraries can provide insight into the ways youth digital practices can exist within the confines of traditional environments, as well as the physical and conceptual structure(s) that supports a dynamic culture of learning.

Arguing that libraries have an imperative to stay relevant by addressing community needs, Eli Neiburger (2007) traced the origins of the library to public spaces where patrons engaged in reading on stone tablets, to the subsequent move to books that were chained to desks, to the evolution of the printing press that allowed for the mass production of books that individuals could purchase. Libraries retained their purpose as a public space, however, by enabling patrons to borrow those same books. Fast forward to the beginning of the new millennium, Neiburger acknowledged that library circulations included electronic media, such as DVDs and CDs, as a way to appeal to a population that increasingly turned to technology for information and entertainment. In contemporary library spaces, patrons with Internet access can acquire books and media through the online library site. Considering that many youth can engage in research from their homes and seeing the growing popularity of videogames, some librarians have begun to include videogames among the materials their

library circulates (Baker et al., 2008) and offer on-site videogame play opportunities for youth, thereby increasing youth comfort with and use of libraries (Boyle, 2018; Pham, 2008). In the last decade, "library game clubs [have become] powerful community centers where youth gather in a safe environment to play video games" (Brown & Kasper, 2013, p. 776). As they have in the past, libraries continue to remain current by attending to community needs and shifting cultures (Levine, 2006, 2008; Scordato & Forsyth, 2014).

Studies of videogaming in libraries – including, but not limited to, videogame clubs, tournaments, and open play – provide an important overview of digital and nondigital games offered in public and academic libraries. Edited collections, such as *Gaming in Academic Libraries* (Harris & Rice, 2008), *Teen Games Rule!* (Scordato & Forsyth, 2014) and special collections, such as *The Impact of Gaming on Libraries* (Nicholson, 2013), *Library Technology Reports* (Levine, 2006), and *Web 2.0 and Gaming in Libraries* (McNichol, 2009) offer insight into how various librarians have introduced and integrated videogame programming. The individual accounts of library protocols related to gaming (e.g., circulation of games, codes of conduct, event registration) provide nuanced and broad-brushstroke examples of how games can be part of public, school, and academic libraries. Additionally teacher–librarians' perceptions and experiences have been examined (Hovious & Van Eck, 2015); library programming goals, structures, and or curricula have been enumerated and assessed (Brown & Kasper, 2013; Martin & Martinez, 2016; Ratliff, 2015; Scordato & Forsyth, 2014); and the social dynamics of gaming in libraries have come to the fore (Abrams, 2012; Adams, 2009).

Despite previous attention to videogaming in libraries, there have been few books about the topic published recently. *Videogames, Libraries, and the Feedback Loop: Learning Beyond the Stacks* revives an important movement to include videogames in libraries. What also sets this book apart from extant literature is the focus on the feedback loop. More specifically, this book closely examines the features of the feedback loop – objectives and rules, progress bars, in-game maps, and leaderboards – because they are critical to players' interpretations of signs and symbols foretelling success, challenge, and even defeat to determine what they need to accomplish and how. In brief, we posit that, by examining youth learning through the feedback loop, librarians and other educators can consider ways to design library spaces to better support iterative, youth-driven experiences.

In this book, we use a sociocultural foundation to address ways that youth make meaning by participating in iterative activities and by interacting with inanimate and living resources. These include, but are not limited to, videogames, digital and nondigital gaming references (e.g., books, online sites, manuals), and other individuals inside the library space, be they other gamers, youth services librarians, other adults, or mentors. Given such interaction and situated meaning making, a sociocultural lens supports a focus on the feedback loop's reflective and iterative components, namely how gamers engage in interest-driven learning, how gamers self-assess areas that need attention, and how gamers, ultimately, grow as learners. In what follows, we discuss the sociocultural theories that support such learning, which can be both individualized and nuanced; although many might

play the same game, their experiences in and around the game can, and will, vary (Abrams & Lammers, 2017).

The Feedback Loop and Theoretical Foundations

Depending on the lens used to discuss learning, a variety of theories can be used to address the feedback loop and meaning making in library spaces (see Chapter Five for more information), but in this book, we focus on two[5] – **constructivist** and **sociocultural theories** of learning – both which acknowledge how experiences shape an individual's current and future understandings. The emphasis on learning-by-doing (Dewey, 1916) and developing and/or refining understandings through such experiences is a key to this discussion. Constructivism addresses how people develop knowledge through their experiences. Jean Piaget (1928) suggested that, as people encounter information, they cognitively organize it according to what is familiar and unfamiliar. For instance, after seeing a pamphlet for the first time, people might consider how it is similar to a traditional book (i.e., it has text, and it opens to reveal more alphabetic text). Upon further examination, readers might discover that the pamphlet opens as a trifold, has images, multiple columns, bullet-pointed details, and only one page with information, signaling that pamphlets might be similar to, but indeed, are different from traditional (i.e., primarily alphabetic print) books. This example is fairly simple but, depending on how new and unfamiliar information is, people must adjust how they perceive and cognitively organize the information. Sometimes the adjustments are minimal, as in the case of seeing pamphlets like books. At other times – often in cases involving technology – adjustments can prompt a paradigm shift: We must create new ways to perceive the experiences all together.

Russian psychologist Lev Vygotsky (1978) also examined the ways people learn from experiences, and his approach was social and cognitive. Recognizing that people's personal and community values originate in their experiences and interactions with social, cultural, economic, religious, and academic settings and resources, Vygotsky acknowledged the impact that sociocultural influences (e.g., culture, community, norms) can have on helping a learner indirectly or directly develop an understanding of information. Vygotsky also called attention to the ways that tool use, gesture, and positioning can mediate perception and learning. These foundational constructs have paved the way for nuanced

[5]Although beyond the scope of the work noted in this book, Seymour Papert's concept of constructionism (1980) suggests that learners develop knowledge through the interaction with tools (namely digital ones) and the construction of artifacts that represent their understandings. What is more, Papert asserted that the use of computers provides children "the opportunity to learn ... in a nonformalized way of knowing" and in interest-driven, self-directed ways (1993, p. 17). Readers interested in exploring this extension of Piaget's work are encouraged to read Papert's *Mindstorms: Children, Computers, and Powerful Machines* (1980) and *The Children's Machine: Rethinking School in the Age of the Computer* (1993).