

Reasons Why and Reasons To Be: Investigating Women's Pathways in Games

By

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Abstract

Digital games are a popular medium for entertainment, creative expression, and play. Research reveals that—in the right context—they can also support learning and engagement. In light of the increasing prominence of games, it matters that women comprise only 22 percent of the game development workforce (IGDA, 2014), filling as few as 4 percent of some of the highest paying roles in the industry (ESA, 2013). In this dissertation, I investigate the learning pathways and experiences of women who work in various roles across the game industry. The research is based on three studies—a qualitative analysis of two industry-wide conversations about the roles of women in games that took place on social media site Twitter, and a series of interviews with women who work in games. These studies were designed for methodological congruence (Creswell, 2007), with the Twitter research revealing the breadth of issues raised by thousands of participants, and the interviews providing the benefits of in-depth insights.

Following immediately after the GamerGate controversy, in which several women in games were—and continue to be—subjected to highly publicized incidents of threats and harassment, this research is particularly timely, exploring both why women may feel compelled to leave careers in the industry, as well as what reasons some women give for persisting. Findings from the Twitter conversations reveal the myriad ways in which women feel silenced and de-professionalized, but that many women feel inspired to due to their passion for the industry, outstanding support networks, and drive to make things better. Through analysis of the interviews, I identify four types of roles that women take on in order to make the game industry a better environment for women in the future, including education, advocacy, serving as role models, and taking on roles as leaders. Finally, I conclude with a framework outlining implications for researchers, educators, and other industry stakeholders. By identifying and

outlining critical issues in women's educational pathways and experiences, this research lays the groundwork for future research on diversity and equity in games.

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Table of Contents

Abstract	i
Acknowledgements	iii
Table of Contents	iv
Introduction.....	1
From <i>Let's Play Ballerina</i> to Games, Learning, and Society	7
Methodological and Conceptual Frameworks	11
Research Questions	14
Research Design	15
Overview of Chapters & Articles	17
A Note On GamerGate	19
References	22
Reasons Why: Examining the Experience of Women in Games 140 Characters at a Time.....	27
Abstract.....	27
Games Are Thriving, But Women Aren't Thriving in Games	27
Reviewing the Research: Why So Few Women in Games?	30
#1ReasonWhy: Background & Context.....	35
Data Collection, Selection, & Analysis Procedures	37
Findings	40
Discussion	57
References	60
Need to Succeed: Women Share Their Reasons to Be in Games.....	65
Why Women Are and Aren't In Games.....	66
Twitter Data	69
Three Kinds of Reasons To Be.....	71
References	80
Combating a Million Messages About Not Belonging: How Women in Games Are Supporting Women in Games	82
Abstract.....	82
Girls in Games and Women in Tech	82
Research Review: Efforts to Get Girls in the Game	85
Theoretical Frame: Learning as a Pathway	91
Methods	93
Background & Context	93
Research Questions	93
Methodological Rationale	94
Participants	96
Interviews & Data Collection	98
Findings	99
Creating Educational Opportunities.....	101
Advocating for Women in Games	105
Being a Role Model.....	110
Women as Game Industry Leaders	113
Discussion	119

References	121
Implications for Educators & Education Research	124
1. Introduce Game Design to Girls' Possibility Space	125
2. Introduce Programming Early and Often	127
3. Make the Diversity of Possible Skills, Roles, and Pathways Visible	132
4. Make Resources, Tools, and Community Available Outside of Computer Science Departments	135
5. Incorporate Industry Culture Content into Game Design Program Curricula	138
6. Support Dedicated Incubator Programs, Venture Capital Funds, & Leadership Training for Women	143
References	147
Final Thoughts & Future Work	148
Appendix A	153
Appendix B	155
Appendix C	161
Appendix D	164
Appendix E	166
Appendix F	167
Appendix G	169
Appendix H	173

Introduction

Youth and young adults in the United States almost ubiquitously use digital devices to work and play. According to recent Pew reports (Lenhart, 2015), 92 percent of teens report going online daily, with 24 percent reporting they do so “almost constantly” (p. 2) using mobile devices like smartphones. Eight out of ten teens own their own laptop or desktop computer, and among those who do not, the majority have access to one in their home (Common Sense Media, 2012). More than 90 percent of boys and 70 percent of girls have or have access to a game console, and 84 percent of boys and 59 percent of girls report playing games on their phones or online (Lenhart, 2015). With digital devices becoming increasingly integrated into how we communicate, work, and play, there is—and will continue to be—a high demand for people who can design for those digital tools and interactions (Grover & Pea, 2013; U.S. Department of Labor, 2013). It is important that we aim to meet that demand with a workforce of designers that are as diverse as the population using them.

While research shows that girls and women are using digital tools and media in equal and even greater numbers as their male counterparts (Lenhart, 2015), they are not developing the skills needed to design and develop for those devices in equal numbers. In 2013, girls were more likely to take an AP exam than male students (Kurtzleben, 2014), but accounted for only 19 percent of AP computer science test takers (Ericson, 2014). See Figure 1 below. Recent statistics on computer and information science degrees suggest similar numbers—women obtained just 18 percent of the degrees in these fields in 2012 (National Center for Women & Information Technology, 2012). The gender breakdown is similar for the game industry workforce, with the latest International Game Developers Association (IGDA) developer survey indicating that women make up about 22 percent of the industry, with another two percent identifying as

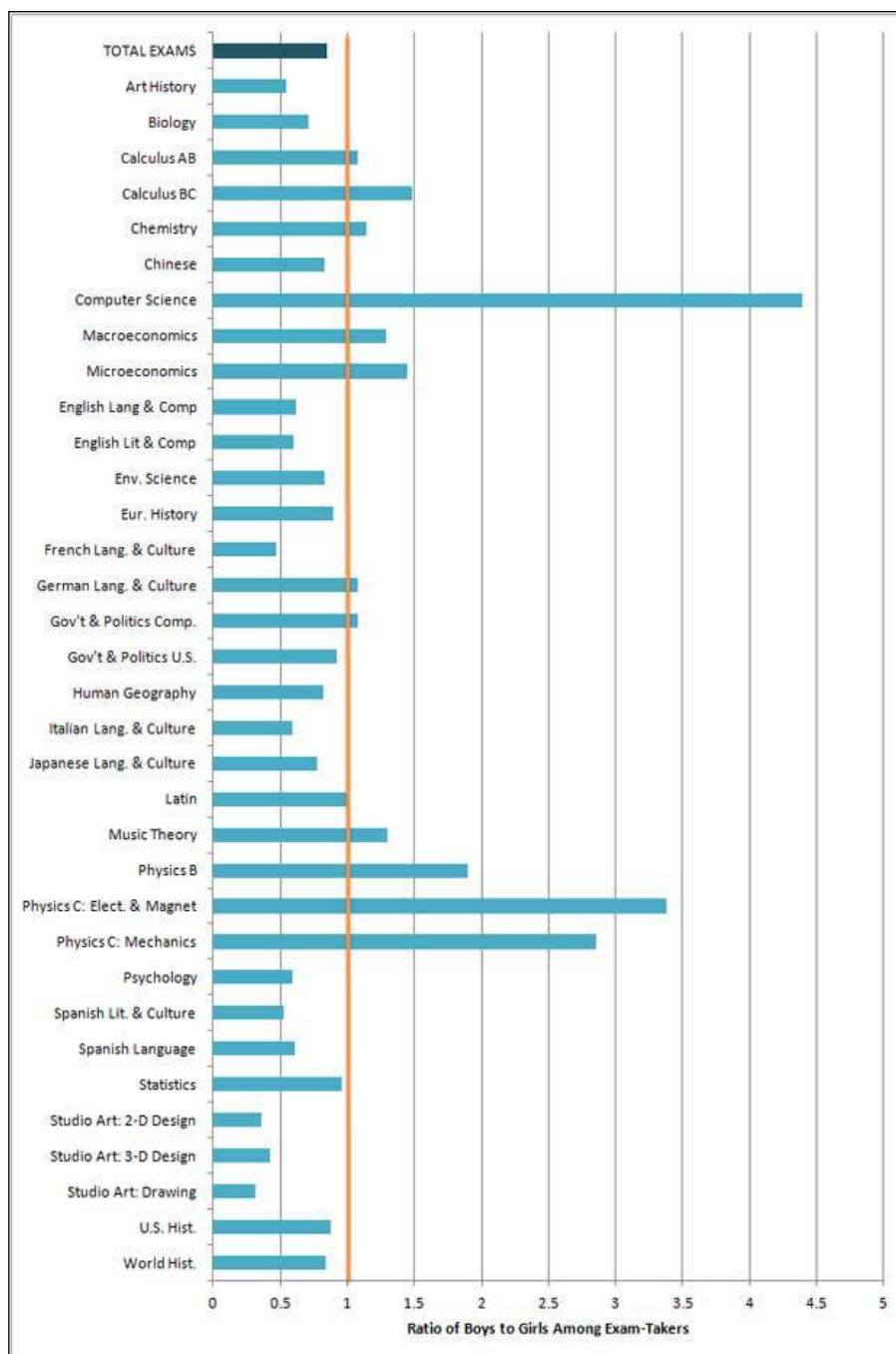


Figure 1. Ratio of boys to girls among AP test takers in 2013. Where the bar ends to the left of the orange line, girls outnumber boys. Where the bar extends past the orange line, boys outnumber girls. Adapted from AP Test Shows Wide Gender Gap in Computer Science, Physics by D. Kurtzleben, 2014, *US News and World Report*.

transgender or androgynous (IGDA, 2014). While that shows a significant rise compared to the 2009 survey where women comprised less than 12 percent of the game industry workforce, recent demographic surveys by the Entertainment Software Association (ESA) suggest that women are more likely to work in public relations and marketing than in game development roles such as programming, design, or art and animation (ESA, 2013)¹.

Women are also underrepresented in executive or leadership roles and as recipients of venture capital funds for their businesses. The recent New York Times Glass Ceiling Index (Wolfers, 2015) demonstrates that among chief executives of S&P 1500 companies, there are four men named John, Robert, William, or James for every one woman. See Figure 2 below.

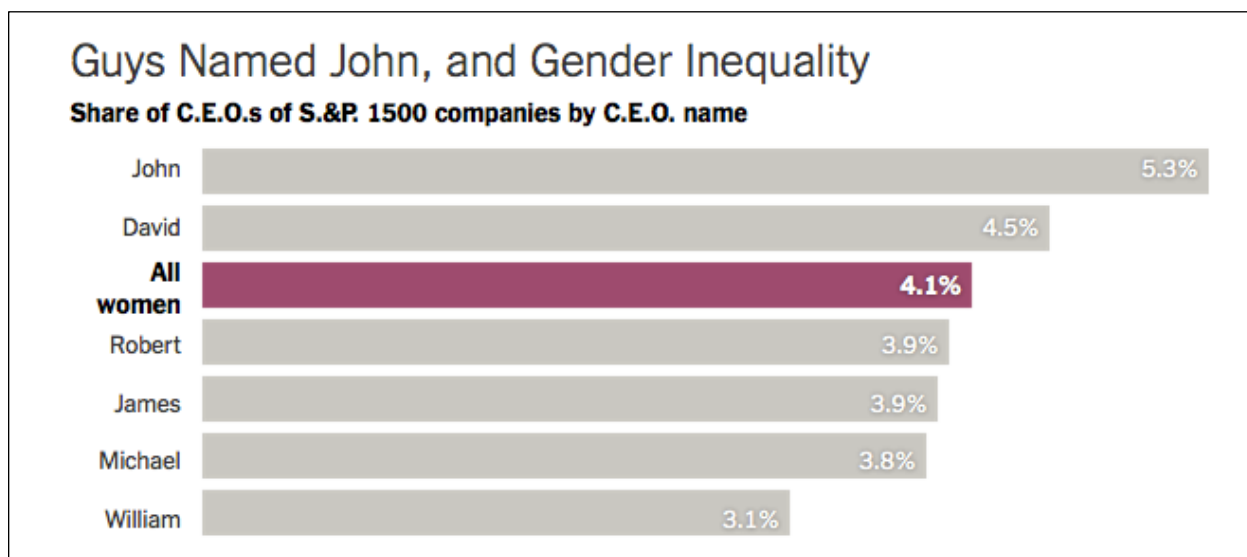


Figure 2. Percentage of female CEOs in S&P 1500 companies compared to men named John, David, Robert, James, Michael, and William. From *Fewer Women Run Big Companies Than Men Named John* by J. Wolfers, 2015, *New York Times*.

¹ With traditional commercial games, mobile games, indie games, and educational games, the industry is in reality myriad industries, but like the IGDA and other organizations who research games, I refer to all of these as a singular game industry throughout this dissertation.

² Crunch time is a common practice in the gaming industry when the development team is perceived as being behind on the development timeline and the developers are encouraged or

Recent estimates show that only 2.7 percent of venture capital funded companies have women in the role of chief executive officer (CEO), with those companies receiving about 3 percent of total venture capital funds. Eighty-six percent of venture-funded businesses have zero women in management positions (Women Who Tech, 2015). Of course, these trends on leadership and venture capital are not unique to games and technology, but as sectors that are particularly well known for being male dominated in both leadership and development, these trends are worth close consideration, particularly since research reveals that girls and women comprise the majority of users of some types of social media and technology (Lenhart, 2015).

Several scholars and leaders in computing fields argue that recruiting more women to careers in technology design leads to increases in creativity, both in terms of digital content and the ways we interact with digital tools (Hayes, 2010). Former President of the National Academy of Engineering William Wulf contends that different groups of people experience the world differently. He writes, “Those differences in experience are the ‘gene pool’ from which creativity springs” (cited in Barker & Aspray, 2008, p. 13). Similarly, Maria Klawe, President of Harvey Mudd College, claims, “If we don’t have women participating and creating the solutions to technical problems, I can promise you that the technical solutions will not be as good” (Microsoft Research, 2012). A recent study in *Science* (Woolley et al., 2010) found that the proportion of women in a group was positively and significantly correlated with the group’s collective intelligence. This finding is in part attributed to the fact that women tend to demonstrate higher social sensitivity than their male counterparts, a feature that is substantially important to measures of a group’s collective intelligence.

There are real consequences when design landscapes do not consist of a diverse pool of problem solvers and designers. In their opening pages of *Unlocking the Clubhouse*, Margolis and

Fisher (2002) cite examples that demonstrate how lack of diversity on design teams can result in product design that does not serve the needs of a diverse user base. For example, some video conferencing software tools frequently failed to recognize female participants because the software was not tested with female users. The result is a design process where women go unseen and unheard both because women are not present in the design process and because the digital tools themselves were designed around male cultural models (Margolis and Fisher, 2002). If we want to recruit more women to technology fields like game design, or make the game industry a better place for the women who are there, it is imperative that we start placing value on seeing and hearing women and other under-represented groups.

To address the gender divide in fields like computer science and industries around technology and games, there has been a recent influx of efforts to introduce girls to game design, coding, and computer science. These resources for introducing girls to technology and coding are essential, but it is equally important that we identify the educational supports and resources to support girls and women on longer term learning pathways. Existing research explores the gender divide in technology fields broadly (Cohoon & Aspray, 2008), and related fields like computer science have benefited from extensive ethnographic research on the educational trajectories of women (Margolis and Fisher, 2002), but there is very little research on women in game design. This sparse body of literature focuses on one-time game design efforts with younger girls (Kafai, 1996, 1998; Denner, 2007; Denner & Campe, 2008) or specific industry issues like crunch time² (Consalvo, 2008). Gaps in existing research do not address the need for

² Crunch time is a common practice in the gaming industry when the development team is perceived as being behind on the development timeline and the developers are encouraged or required to work over-time hours. Some development studios are notorious for planning crunch into the development cycle, essentially expecting that all projects will reach a point where the team is required to put in crunch hours.

understanding the experiences of women who pursue—or attempt to pursue—careers in games. We lack a broader knowledge about the learning pathways, experiences, and expectations of women who have made careers in game design, leaving educators with under informed understandings of the social and cultural learning resources that women need to persist in the face of specific challenges they may encounter while navigating careers in the game industry. It is time to start seeing and hearing women in games.

Giving women a voice means understanding the qualities of their experiences (Stevens et al., 2008). It means learning about the different pathways that they take to games and understanding how they experience those pathways. This dissertation consists of a three-part study researching the learning pathways and experiences of women in game development careers. The first study explores an industry-wide Twitter conversation to answer the question, “How do members of the game industry account for why there are so few women in game design? This study provides a broad understanding of the challenges and frustrations faced by women in games. The second study investigates a smaller follow-up Twitter conversation focused around why women persist in game careers, specifically addressing, “What reasons do women give for being in games?”

For the third study, I explore the learning pathways, experiences, and expectations of women in games based on interviews I conducted with 21 women who work in various roles across the game industry. Through this study, I was able to identify salient challenges faced by women in games and to discover the resources and means by which they are able to overcome these challenges. The strength of the interview methodology is that it offers in-depth descriptions of individual women’s learning pathways to games, as well as their experience as women in the game industry and their expectations for the future of the industry. In the final chapter, I use

findings from the Twitter and interview studies to outline an emerging framework of six recommendations that educators and other game industry stakeholders can use to better reach out to and support young women interested in careers in games.

Better understanding the learning pathways, experiences, and expectations of female game designers can lead to important insights that can help educators design more inclusive classes, curricula, and informal learning programs that contribute to leveling the playing field for girls and women around games. Before I outline the conceptual framework and research questions for this study, I first share how I came to write about girls and games, and explain how those experiences have shaped the design of my research.

From *Let's Play Ballerina* to Games, Learning, and Society

In 2008, I was working as an editor on a game press website called Green Pixels. Our editorial goal for the site was to write about games for a mainstream game audience. Rather than writing for the hardcore self-identifying gamers that most game sites cater to, our audience was people who play and enjoy games, but who do not necessarily identify as gamers. As part of my work for the site, I started reviewing games developed for adolescent girls. At first it was not a strategic project. I did not have an over-arching goal. It was simply something that I started to do on occasion—mixing them in with other genres that I reviewed, including mainstream role-playing and adventure games, as well as fitness titles. Eventually, I observed a recurring pattern—the games targeting tween and teen girls made me mad. They were:

Underdeveloped.

Disappointingly Shallow.

Condescendingly Simple.

Annoyingly Buggy.

And Sometimes Flat Out Broken.

These games presented a portrait of adolescent girlhood that I find to be impoverished to the point of being offensive. I was disheartened by how simple the mechanics and concepts of these games were compared to the titles usually marketed to boys. I offered to review game after game after game, looking for a title to prove me wrong. I wanted to believe there were developers out there who really care about girls rather than preying on unknowing parents and grandparents who bought these overly simplistic games because they did not know any better. I found small a ray of hope in the *Nancy Drew* series, putting girls in the role of a confident, smart and intelligent young woman who collaborated with her friends to solve difficult problems. The *Nancy Drew* games were exceptional, standing alone in a ghetto of pink.

I soon realized I could review every girl game ever made. I could request interviews with publishers and continue to get pre-fabricated, PR team-approved answers from companies that clearly wanted me to mind my own business. What I could not do in the game press at the time was do anything to make those games better. I had no idea how to affect change. Not knowing exactly what I would do, but feeling like it was better than nothing, I began my search for a graduate program, seeking groups doing socially meaningful research on games. In September 2010, I joined the Games+Learning+Society community, hoping that it would pave the way for me to make an impact for girls and women in games.

In my graduate program, I discovered new ways of thinking about both games and the many activities that people engage in around games. We know that the media often portrays

game players as passive consumers, bordering on brain-dead as they slump over their controllers, staring forward with dull, dead eyes. The games and learning field challenges this view, showing how gameplay and game communities can be significant and consequential. Stevens, Satwicz, & McCarthy (2008) call the ongoing debate over the value of games as “flare-up in the Culture Wars” (p. 42). They describe on one hand “a view of video games as mind-numbing, antisocial, low culture activities,” and on the other hand games “as wellsprings of new cultural production, positive identity formation, and learning of all shapes and sizes” (p. 42).

The literature on games and learning reveals that games—in the right context—can be powerful tools to support learning and engagement. Gee (2007) outlines several principles of learning that are embedded into the design of good games. Investigating how young people make meaning while playing *Grand Theft Auto: San Andreas*, DeVane and Squire (2008) observed that adolescent players are not passive consumers of game content. They *interpret* game content by drawing on their own prior knowledge, identities, and discourse models. (DeVane & Squire, 2008). Stevens, Satwicz, & McCarthy (2008) found that when young people play games together, they take on the task of organizing themselves as resources for one another, fluidly switching between the roles of teacher and learner. This research suggests “in-room interaction provides opportunities for sociality, joint projects, and empowerment through sharing one’s knowledge and seeing it used for concrete success by others” (p. 53).

Steinkuehler’s research on an after-school incubator program for studying the gameplay practices of academically disengaged adolescent boys challenges many strong-held assumptions about literacy learning and engagement (Steinkuehler & King, 2009). This work pushes back on the notion that books and games exist in opposition to one another (Steinkuehler, 2010) and bucks against the perception that games are replacing so-called legitimate literacy-based

activities like reading books (Steinkuehler, 2007). It shows that games are part of a complex information ecology (Steinkuehler, 2010) where teens engage in a constellation of literacy activities (2007) no less complex than composing fan fiction or engaging in traditional school-based literacies (Black & Steinkuehler, 2009). Normative participation in game playing communities can also give young players the opportunity to participate in various forms of social knowledge construction and engage in evidence- and model-based reasoning (Steinkuehler & Duncan, 2008).

Research suggests that game design, and even game play, also promote the development of computational thinking. Berland and Lee (2011) found evidence that game players spontaneously engage in complex computational thinking while playing collaboratively (2011). Computational thinking (Wing, 2006) describes an ability to answer the question, “What can I build to understand and/or solve this problem?” Proponents for teaching computational thinking in schools claim that if the education community believes that math and science are crucial for children to understand how the world works, so too is computational thinking. Grover and Pea (2013) believe that “those in possession of computational competencies will be better positioned to take advantage of a world with ubiquitous computing (p. 40). Even people who never learn to program computers can share the benefits of computational thinking skills—knowing how to better solve problems, design systems, and prototype ideas.

If you subscribe to the more negative rhetoric around games, then the low quality of games marketed to young women, or the low numbers of women in development positions, are a non-issue. However, in light of evidence that being a part of game communities can have consequential implications for learning, sociality, and cultural engagement, tackling major demographic inequalities becomes a more critical issue. If we accept that game play and

participation in the communities and practices that players form around games can have myriad learning benefits, then we should not treat it as inconsequential that girls are often discouraged from playing games or from participating in game-based fan communities. For me, this last phase of my PhD journey circles back to the interests and values that brought me here to begin with—a desire to do research that opens up opportunities for girls and women in games. And perhaps because of my previous work as a journalist, it seemed to me that the best way to do research to benefit women in games was to collect and analyze the experiences of the uncontested experts on the topic—women who play and make games.

Methodological and Conceptual Frameworks

A Case for Qualitative Methods. “I interview because I am interested in other people’s stories,” says qualitative researcher and phenomenologist Joseph Seidman (2013, p. 1), who describes stories as a way of knowing. Sideman argues that he came to see the stories and details of people’s lives as a way of knowing and understanding because of his former career as an English teacher. For me, the same is true because of my background in literature and journalism. Having previously collected stories to share them, I now seek stories with methodological purpose, using people’s unique trajectories and experiences as a way to investigate educational, social, and cultural phenomena around games and technology.

For the purposes of this dissertation research, I use stories to investigate the experiences of women in games. The claims and findings I outline in this research are based in story—both from several thousand stories told in 140 characters each and from more detailed stories from interviews with women in the game industry. There is much to be said in being able to generalize but I believe there is also a lot of value to be found in “the uniqueness of individual lives” (Stake,

1995, p. 36). John Creswell explains, “We conduct qualitative research because we need a complex detailed understanding of the issue...that can only be established by talking directly with people...and allowing them to tell their stories” (2007, p. 40). Qualitative methods, he argues, are a way to empower people to share their stories, and as a way for us as researchers and readers to hear their voices.

As a former English major and journalist, and as a lover of stories, it was very important to me that my research design enables me to put the words of my participants directly into my writing. I take every opportunity I can to do that. The findings of this research suggest that women have too long been ignored and silenced in games and the game industry. With the chapters and articles I composed for this research, I do my best to highlight women’s voices and honor their perspectives. They do the talking. I summarize, analyze, and synthesize the themes. I would not want it any other way.

A Case for Learning Pathways. To better support women in game careers, we need research that examines their long-term learning pathways. In their book *Women and Gaming*, (2010), Gee and Hayes argue for more detailed investigation of longer learning trajectories. They explain:

We tend to think of learning as something done in the here and now, with all the action in the present: what does this learner know right now? The way we assess learning in school tends to encourage this point of view. But learning anything, at least anything deeply, always creates a history reaching far back into the past and extending out into the future. We should think of learning in terms of learning trajectories, or paths of development. (p. 91)

What Gee & Hayes call ‘learning trajectories’ and ‘paths of development’ I choose to call learning pathways.

I choose the term pathways over trajectories strategically. Trajectories³ imply that learners are acted upon, and by forces that once set in motion, take a pre-determined direction that cannot be changed unless another force acts upon the learner. By contrast, pathways leave up the possibility for the learner to have choice about which directions to pursue, even being able to develop and create learning opportunities for themselves (Barron, 2006). Barron describes a “multiplicity of pathways among learning contexts that learners might take” (p. 200) depending on the learner’s unique configuration of interests, which are determined by the combination of ideational, social, material, and identity resources that the learner has access to. She shows that learning involves an appraisal process wherein learners appraise the fit of a potential learning direction by examining it against their sense of self and perception of their values.

Other scholars have opted to use the idea of learning pathways over other terms, including Berland et al. (2013) and Nasir et al. (manuscript in preparation). Nasir et al. conceptualize learning as occurring along culturally organized pathways. They define these pathways as “the sequences of consequential participation in learning activities that move one toward greater social recognition as competent in particular learning domains” (p. 1), taking into account the resources the learner has access to, how the learner is positioned within the range of learning settings in which they spend time, and how identity is conceived of in the process of becoming.

Much like Barron’s theory of learning ecologies (Barron, 2004; 2006), the learning pathways framework I use conceptualizes learning pathways as being taken up in relation to

³ A trajectory, as defined by the Oxford English Dictionary, is “the path followed by a projectile flying or an object moving under the action of given forces.”

identities and as being constructed by both self and others over multiple instances and across time. Stevens et al. (2008) describe their participants as “engineers-in-the-making” (p. 355), charting a course and moving through “personal and institutional pathways” (p. 356) as they work to identify as, and be identified as, an engineer. Though not students, the women in my research go through this same process of identifying, and being identified, as game designers and professionals in the game industry.

Research Questions

In the three studies that make up this dissertation project, I address five research questions that examine how women in various roles across the game industry describe the processes of becoming and being a woman in games. The questions include:

1. How do members of the game industry account for why there are so few women in game design? (Twitter, #1ReasonWhy)
2. How do members of the game industry describe reasons for women to be in game design? (Twitter, #1ReasonToBe)
3. How do women in games describe their learning pathways to their career in games? (Interviews with women in games)
4. How do female women in games describe their experience in the game industry? (Interviews with female women in games)
5. How do women in games describe their expectations for the future in terms of their personal career and for other women in games? (Interviews with women in games)

I address the first two research questions through an analysis of two interrelated conversations that took place among game developers, industry stakeholders, and game players over the social networking platform Twitter. The final three research questions form the guiding foundation for interviews I conducted with women in various roles across the game industry. These interviews addressed women's past, present, and future learning pathways and experiences as women in games.

Research Design

Methodological Congruence. Creswell (2007) argues that one of the features of good research is methodological congruence. A research project is considered to have methodological congruence when the purposes, questions, and methods of research all align to be interconnected and interrelated such that the study functions as a cohesive whole rather than a series of loosely connected fragments (p. 42). The individual components “mesh to make the best possible end product” (Richards & Morse, 2013, p. 35). According to Creswell (2007), one of the best ways to design a study that has methodological congruence is to begin with a single focus. By beginning with a single concept or idea, the researcher is able to bring a sense of coherence to the assumptions, worldview, and theoretical or conceptual lens that serve as the foundations of the research.

Although I conducted three different research studies for this dissertation, and have written the following sections as articles and chapters to be submitted as separate publications, I based the research design of the project on the principles of methodological congruence. Each piece of this research derives from a single focus—investigating the pathways and experiences of women in games. Similarly, each component of this dissertation—the three studies and the

framework based on the findings—is an essential component of the cohesive whole. Every type of data or family of research has unique affordances and constraints. I favor in-depth qualitative methods, but that depth comes at a cost. The time intensive nature of conducting, transcribing, coding, and analyzing interviews severely limits the number of participants and perspectives that I am able to include. One of the strengths of the Twitter study is that it balances out sample size constraints necessitated by in-depth interviews. For the studies on the #1ReasonWhy and #1ReasonToBe tweets, I was able to analyze perspectives from more than 2,000 participants. Where the interviews offer depth, the Twitter studies provide breadth. Finally, by using the findings of both types of studies to develop a framework for educators and industry stakeholders, I am able to tie everything back to where my expertise and training is focused—learning environments. By design, each major piece of this research compliments the other pieces, and the overall whole is much more powerful than the individual studies.

Inductive Design. One of the design features of qualitative research is its inductive nature (Creswell, 2007), requiring flexibility to respond to emergent insights (Maxwell, 2013). Throughout the process of conducting this research, I ended up making a few small changes to the study design in order to respond to emergent challenges and changes that I had not originally anticipated. Initially, I had planned to follow the three-part interview series that Seidman outlines in his book *Interviewing as Qualitative Research*. This turned out to be an unrealistic expectation for a dissertation study conducted over six months. There are a few different reasons for this. The first major constraint was financial. Without grant support that would enable me to offer incentives for participants, it was unreasonable to ask them to make time for three separate meetings. The second major constraint was time. For the most part, the participants in this study are professionals working in a demanding field, and many balance the challenges of being

partners and mothers, or of holding more than one job consecutively. Many of these women were being generous in setting aside even a few hours for a meeting and are unable to commit more time. Finally, geography posed a challenge to the three-interview plan. The majority of the interviews I conducted with women in the game industry took place at academic and industry conferences, such as Meaningful Play in East Lansing, Michigan, a panel on women and games at the University of Minnesota, and the Game Developers Conference in San Francisco. Scheduling even one interview during a busy conference is a challenge. Talking to women three separate times during an event, or scheduling off-site follow-up meetings turned out to be an unreasonable expectation.

While I was initially concerned that one interview may put me on “thin contextual ice,” as Seidman warns (p. 20), I found that one meeting was entirely adequate for talking with women about their learning pathways, experiences, and expectations. In the future, I would love the luxury of conducting a truly longitudinal study in which I am able to speak with participants several times over a period of several years. My dissertation is not that study. Overall, I do not think the quality of research suffered due to the one-interview constraint. Many of the interviews lasted between one and a half and two hours, and one even lasted almost four. One long-form interview with each participant was ultimately adequate for acquiring a rich and plentiful data set about the diverse experiences of women in games.

Overview of Chapters & Articles

At my dissertation proposal defense on September 24, 2014, the three attending members of my committee and I agreed that due to the multi-study research design of this project and the timing of a research study exploring the pathways and experiences of women in games, the ideal

format for this project is an article-format dissertation. Following the writing strategy we laid out in that conversation, I have structured this dissertation so that it is laid out in four major parts:

1. #1ReasonWhy Study (Journal Article)

The first article in this dissertation study outlines the research I conducted on the #1ReasonWhy Twitter conversation, exploring why women choose not to pursue or persist in careers in the game industry. This article has been prepared for submission to the journal *Games & Culture*, and therefore adheres to their guidelines for length and formatting.

2. #1ReasonToBe Study (Book Chapter)

The second piece in this dissertation provides an analysis of the follow-up conversation to the #1ReasonWhy discussion—#1ReasonToBe, providing an analysis of the conversation outlining what reasons women give for being in games. This piece has been prepared for submission as a chapter in a book tentatively titled *Diversifying Barbie and Mortal Kombat*. This book is a follow-up to the previous two books on women in games, *From Barbie to Mortal Kombat* and *Beyond Barbie and Mortal Kombat*. This piece is substantially shorter than the other two articles because it adheres to the editor's request that book chapter submissions be no more than 5,000 words total.

3. Interview Study (Journal Article)

Following the two pieces on the Twitter research is a journal manuscript based on the interviews I conducted with women in various roles across the game industry. I have yet to identify the most appropriate journal publication for this piece, and therefore have written it in a generic APA journal article format with the intent to make edits and modifications once I have identified a target publication. Findings in this piece outline

four types of roles that women in games take on in order to play a personal role in making the game industry better for women in the future.

4. Implications for Education Stakeholders

The final major component of this dissertation study is an overview of implications and recommendations for education stakeholders based on findings from the Twitter and interview studies. This goal of this piece is to provide a synthesis of themes from a lens and perspective that will specifically be useful to stakeholders in education communities. It is not currently formatted for publication, as I intend for it to be a concluding piece that outlines potential avenues for future research.

A Note On GamerGate

I began collecting data for this research in October 2014, which coincided with the height of the GamerGate controversy. GamerGate is a game culture war⁴ that has played out largely over social media platforms such as Twitter. Proponents of GamerGate protest what they perceive as preferential treatment for feminist game developers and game critics from members of the game press and media. For some of GamerGate's original followers, the term signified a movement calling for more ethical practices in the game press, including greater separation between developers and press. The controversy gained momentum when game developer Zoe Quinn was falsely accused of having an affair with Kotaku contributor Nathan Grayson in exchange for favorable press coverage about her game *Depression Quest*.

⁴ GamerGate has been called a “game culture war” by many members of the press, but I believe the term originated from an online editorial on *Time* written by game journalist Leigh Alexander. See <http://time.com/3274247/video-game-culture-war/>

Regardless of the movement's initial intentions, it was ultimately co-opted by a minority of gamers who used GamerGate as justification for perpetuating a persistent onslaught of harassment against several women who work in games. Some of the movement's most well known victims include game developer Zoe Quinn, feminist media critic Anita Sarkeesian, and outspoken developer/CEO Brianna Wu. These women, and others, received numerous death threats, rape threats, and other vicious forms of harassment over a period of many months. For some victims, the harassment is still ongoing. Other forms of abuse included doxxing, a practice where personal information about a person is released publicly on the Internet, including their home address, phone number, bank account information, or other information that could be used to identify or harm the victim. Some of GamerGate's victims were also swatted, a practice that involves a false report of an emergency meant to bring a response team to the location of the victim. The incident is often chaotic, stressful, and sometimes emotionally damaging to victims. People who spoke out against GamerGate and the corresponding harassment came to be called white knights and social justice warriors, which were initially meant to be derogatory. Many groups and individuals have since chosen to take up those labels with a sense of pride.

I call special attention to the GamerGate controversy in the introduction section here because I believe it is important to explain the impact that the controversy had on this research study. It would have been ethically irresponsible from a research perspective, and perhaps logistically impossible, to ignore the GamerGate controversy as it was happening considering this is a research study on women in games. For the interviews, I had originally planned to ask each of the participants about their experience as women in the industry and their opinion about the future for women in games, so it only made sense to ask their opinions about GamerGate and to talk about if—and how—it had affected them.

The fact that a very public and very visible series of attacks against women in games took place right as I was collecting data for this study changed the tenor of the interviews. The extent to which GamerGate was a prominent part of the conversation varied drastically across interviews. Two of the twenty-one research participants had not ever heard the term GamerGate, but were aware that there was some controversy concerning women in games that was being covered in mainstream media. Conversely, a few of the study's participants were among the movement's most prominent targets and were the recipients of the threats and harassment described above. Most of the participants fell somewhere in the middle of these two extremes. These women followed the movement and were articulate about how it had affected their perspectives and behaviors. Most women reported being involved in one way or another, even if just through participating in the conversation over social media.

Because I had so much data from the interviews—around 500 pages of transcripts—there were a number of themes I could have chosen to focus on for the article based on the interviews, including their experiences with GamerGate. However, in light of the fact that my analysis on the #1ReasonWhy conversation already highlighted many of the themes around the marginalization of women in games, I chose to focus instead on how each of the participants is playing their part in making the game industry better for women in the future. In my mind, this more solution-oriented approach is in line with my professional goal of doing research and advocacy work to promote positive pathways for women in games and technology.

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Reasons Why: Examining the Experience of Women in Games 140 Characters at a Time

Abstract

Recent discussions around digital games and game cultures have revealed myriad challenges for female professionals in the game industry. One of these conversations began in late 2012 on the social networking platform Twitter when a user posed the question, “Why are there so few lady game creators?” Using the hashtag #1ReasonWhy, Twitter users from across the game industry and game-playing communities contributed to a discussion about what women experience in public and online game-playing spaces, at game industry events, in game industry workplaces, and in the media. This article examines the #1ReasonWhy conversation to uncover how members of the game industry and of game communities account for why so few women choose to pursue and stay in game industry careers. Better understanding women’s experiences can aid researchers, educators, and game industry stakeholders in theorizing how to make meaningful improvements to game cultures and industry spaces.

Keywords

gender, game industry, video game culture, gamer identity, online discourse

Games Are Thriving, But Women Aren’t Thriving in Games

Business is booming in the digital game industry. In 2013, total consumer spending on games, hardware, and accessories reached more than \$21.5 billion (Entertainment Software Association, 2014). “No other sector has experienced the same explosive growth as the computer and video game industry,” says Michael Gallagher, president and CEO of the Entertainment

Software Association (ESA) (Entertainment Software Association, 2013). The game industry is one of the fastest growing sectors of the United States economy, seeing a growth rate of more than seven times that of the larger U.S. Economy in 2012 (Entertainment Software Association, 2012). With this increasing growth in the game industry, those employed in game development studios are poised to thrive. The video game industry in the United States directly employs more than 42,000 people across 36 states. In 2012, these employees received a total compensation of more than \$4 billion (Siwek, 2014). In 2014, the average employee saw an annual compensation of between \$83,060 (Gamasutra Salary Survey, 2014) and \$94,747 (Siwek, 2014), depending on which of the most recent surveys you ascribe to.

While most signs indicate a positive outlook on games from a business perspective, it is a well-known fact that the game industry struggles to recruit and retain women. Research shows that women *play* games in almost equal numbers as men. The latest figures show that forty-eight percent of game players are women (Entertainment Software Association, 2014). However, women have not—and still are not—taking up careers in games proportionally. In the latest Developer Satisfaction Survey from the International Game Developers Association (IGDA, 2013), just 22 percent of respondents identified as female. Admittedly this is a significant change over the 2009 survey, where women made up only 11.5 percent of the sample, but at 22 percent, women are still highly underrepresented considering nearly half of game players are female. Additionally, women tend to be over-represented in public relations and marketing jobs, but they are much less visible in game development. The table below outlines the percentage of women holding specific types of game development jobs in 2013 (ESA, 2013).

Job Title	Percentage of Jobs Held By Women
Artists & Animators	16 percent
Audio Professionals	4 percent
Game Designers	11 percent
Game Producers	23 percent
Game Programmers	4 percent

Table 1: Percentage of game industry jobs held by women in 2013. (ESA, 2013)

In recent years, women have graduated with 18 percent of the computer and information science degrees awarded in the United States (National Center for Women & Information Technology, 2012) and comprise about 29 percent of the United States information technology (IT) job market (White House Council of Economic Advisors, 2000), but they hold only 4 percent of game industry programming positions. So why are women choosing not to pursue, or remain in, careers in games? In this article, I review how members of the industry responded to this question in the #1ReasonWhy conversation, but first I review the research literature to determine what other scholars have found to be significant influences for women in games. The literature suggests that a number of factors may contribute to the low number of women in games, including gendered norms of leadership in IT fields; a lack of commercial games that appeal to women; inflexible norms in the industry's design process; and pervasive practices such as crunch time, which may disproportionately affect and deter women.

Reviewing the Research: Why So Few Women in Games?

Findings from research on leadership in IT workplaces suggest that particularly in technology fields, men are more likely to be employed as supervisors, and women are more likely to be the supervised (Wardell, Rogers, and Sawyer, 2004). The data shows that there are multiple factors at work—fewer women are hired in the first place and women in IT jobs are less likely to be promoted. Managers in IT fields tend to recruit employees in their own image (Faulkner, 2002), so if the managers are mostly men, then men are more likely to be promoted to management positions. Stereotypes and biases play a significant role in these practices, and in ways that may deter women with ambitious professional aspirations. Igbaria and Baroudi's (1995) study of information systems employee-supervisor pairs in a large company in the United States found that although performance evaluations were similar for men and women, "the women were viewed by supervisors as less promotable than the men because the performance of the women was less likely to be attributed to ability and effort, and more likely to be viewed as emanating from help and luck" (Cited in Bartol & Aspray, 2008, p. 404). These inconsistent appraisals of success may be incredibly damaging if they prevent women from obtaining well-earned promotions. Hayes (2010) explains that evaluation biases, the tendency to judge people's talents more positively when they match a stereotype, are likely to differentially impact the rates at which men and women are hired, retained, and promoted in male dominated IT fields such as the game industry. Women who desire leadership opportunities may choose not to pursue careers in industries such as these, believing that their ambition might be better rewarded in other domains.

Research on the game industry more specifically suggests that recruiting more women to game careers can be accomplished by making more games that appeal to women. Describing a

vicious development cycle, Fullerton, Fron, Pearce, and Moire (2008) explain: If there were more games that girls and women like to play, more women would work in the game industry. And if more women worked in the game industry, there would be more games that girls and women like to play. Fullerton and colleagues argue for a shift from a *vicious* cycle to a *virtuous* cycle: “make a game that appeals to women, draw more women to work on games, make more games that appeal to women” (p. 165). The logic seems sound, but recruiting women in development jobs has proven difficult. Women *play* games in large numbers (Lenhart et al., 2008; Entertainment Software Association, 2013), but as feminist media critic Anita Sarkeesian (2013) and game journalist Tracy Lien (2013) demonstrate, women are still largely absent as complex game characters, and they are rarely the demographic that game marketing departments target. The dominant cultural rhetoric is still that men are “the makers, the buyers, and the players” (Lien, 2013).

Fisher and Harvey’s (2013) research suggests that one of the ways the industry could better support women is by embracing changes to the game development process. In their work, they examine a deep-set tension that developed between the organizers and participants of a Toronto program for supporting women through the process of making their first indie⁵ game. This tension developed from a difference in how the event organizers represented the aspiring female game developers and how the participants positioned themselves. Assuming that the participants were largely unknowledgeable about the game development process, that they were intimidated by programming, and lacked access to resources and role models, the organizers inadvertently reified a binary that positions men as the technology proficient gender. Fisher and

⁵ Indie, or independent games, are games made by individuals or small teams without financial backing from a game publisher. Many game developers choose to make independent games in order to have greater freedom to pursue their own ideas or to focus on innovation.

Harvey's assessment is that the organizers favored an "it's not personal, it's business" discourse that represents game-making communities as a meritocracy, thereby missing an opportunity to question dominant practices in the game-making process. In contrast, the female participants embraced an alternative design process that questioned the dominant practices of the industry, thereby rewriting what being an indie developer might look like. This research hints at the value of exploring different models for how developers can foster a more inclusive industry culture that welcomes diverse perspectives, emergent practices, and new forms of participation.

In her research on the challenges that female game developers face in the workplace, Cosalvo (2008) argues, "It is important to understand how industry and professional constraints, biases, affordances, and practices all shape not only the products that are created but the living conditions within that industry, and perceptions and beliefs about its processes and practices" (p. 179). She cites a number of factors that drive women away from game industry careers, including marketing disconnects, structural sexism, and the industry's resistance to change. Her research on how routines of production and professional ideologies operate in the game industry reveals that women have complicated relationships with the industry's work cultures. Among the women that Consalvo (2008) interviewed, crunch time⁶ was the most frequently noted concern. Though an extreme case, one of her participants described mandatory 12 to 14-hour workdays where permission was required to leave the building outside of designated hours. One of the concerns is that these practices may disproportionately drive away women. The values perpetuated by crunch time align with up-all-night, tech-obsessed geek stereotypes that are

⁶ Crunch time is a common practice in the gaming industry when the development team is perceived as being behind on the development timeline and the developers are encouraged or required to work over-time hours. Some development studios have reputations for planning crunch into the development cycle, essentially expecting that all projects will reach a point where the team is required to put in crunch hours.

known to dissuade women from studying computer science (Margolis & Fisher, 2002; Haigh, 2010). Crunch time practices are also daunting to women concerned about their responsibility to their families. Weinberger's survey (2004) of college women revealed that nearly 40 percent of women believe that IT careers are incompatible with the demands of raising children. If the industry has a reputation for a demanding crunch time culture, college women may be deterred from seeking jobs in games.

Another major obstacle for recruiting women to games is the industry's reputation for sexism. In their 2014 Developer Satisfaction Survey, the IGDA asks industry professionals what factors most influence society's negative perceptions of the game industry. Fifty-one percent of respondents believe that perceived sexism in the industry workforce is a significant factor. Sixty-seven percent cited sexism in games as a major issue (IGDA, 2014). Fisher and Harvey (2013) found that among first-time female game developers, one reason they have not made a game before is "due to the sexism, misogyny, and marginalization that they had experienced...as visible females engaging in public game related activities" (p. 31).

Recent events and media trends have further exacerbated the industry's reputation for sexism. In 2012, disgruntled game players leveraged a vicious harassment campaign against feminist media critic Anita Sarkeesian after her web video series *Tropes vs. Women in Games* become widely publicized (Sarkeesian, 2012; O'Meara, 2012; Robertson, 2013). In 2013, game designer Brenda Romero resigned from her position as IGDA Women in Games Special Interest Group co-chair out of exasperation with the organization's choice to employ underdressed women at their annual Game Developer's Conference party (McElroy, 2013). This story was also widely circulated in the game press and other media outlets.

Finally, the recent GamerGate controversy has brought an onslaught of attacks on the game industry. This comes predominantly in the form of press expanding on incidents of harassment brought against select female game designers, journalists, and critics. Proponents of the movement argue that GamerGate is ostensibly a call for more stringent ethics in game journalism. Believing that the game press gives disproportionately sympathetic coverage to people they consider to be outsiders—indie developers, feminists, and left-wing academics—these individuals see the press as alienating, and even vilifying, their traditional core audience. Opponents of the movement argue that the ethics in journalism debate functions as little more than an excuse to direct threats and harassment toward high-profile women in game communities and to perpetuate cultures of sexism and misogyny in games.

Some scholars and critics argue that the GamerGate movement is ultimately the backlash of a minority gaming audience that feels threatened by increasing diversification in games. Former game czar for the White House Office of Science Technology Policy Constance Steinkuehler explains: “GamerGate is being run under the banner of games journalism. In fact, it’s really overt attacks on the diversification of the medium.” She adds, “We’re no longer at a place where we can ignore the diversity of players” (2014). Viewing GamerGate from this perspective, the attacks on women in games are the response to what some gamers perceive to be an attack on the gamer identity. The GamerGate controversy has been caught up in a larger discourse around what it means to be a gamer and who that term does and does not include. Some members of game communities, perhaps most notably journalist Leigh Alexander (2014), have worked to dissociate themselves from the term ‘gamer’ in light of the prominence of hate-speech, intolerance, and sexism in many on- and offline game spaces.

Regardless of individual interpretations of what the movement is about, an overall effect of the GamerGate controversy has been to bring games into the public eye, and not in the most flattering of ways. While the GamerGate controversy signifies a significant moment in game history, it is ultimately one part of a bigger and broader discourse on games. In this article, I explore another conversation in this discourse—the #1ReasonWhy conversation, which began in late 2012 when a community manager working for Kickstarter Tweeted the question, “Why are there so few lady game creators?”

#1ReasonWhy: Background & Context

“When announcing MY new game, an industry publication referred to me in the headline not by my name but as John Romero's wife.” This is a Tweet from game designer Brenda Romero and she has been making video games since 1981. *Next Generation* magazine named Romero as the woman with the longest continuous service in all of game development. Romero was recently honored with the prestigious Ambassador Award at the 2015 Game Developers Choice Awards. Of all people, one might expect Romero to be known, and respected, across game communities. At the same time Romero expressed her frustration, many other women Tweeted similar micro-stories about disheartening incidents at industry events, in game industry workplaces, and from online interactions. The #1ReasonWhy hashtag originally emerged as a response to Kickstarter community manager Luke Crane asking his Twitter followers why there are so few women making games. Using #1ReasonWhy, developers and professionals throughout the industry joined gamers and industry enthusiasts to offer their responses, stories, and frustrations. The hashtag served to unify a conversation that both connected and divided the industry.

The purpose of this study is to identify how members of the game industry account for why so few women choose to pursue and stay in careers in the game industry. With this article, I outline the landscape of issues that women face in game design as it is articulated and debated by members of game communities on Twitter. Choosing to study a conversation from a popular social media outlet enables me to include a broad array of opinions and perspectives, but of course only individuals who use Twitter are included in such a conversation. Recent Pew reports (Duggan, et al., 2015) suggest that 23 percent of online adults use Twitter, including 24 percent of men and 21 percent of women. Twitter is especially popular with adults under the age of 50, college-educated members of the population, and individuals who live in households that make an annual income of more than \$50,000. Each of these—being under 50, being college educated, and making a high wage—are typical for the majority of members of the game industry. Considering the overlap of those populations and the fact that the game industry generally has a technologically literate and engaged population, it is fair to assume that more members of the game industry use Twitter than the 23 percent adult average.

While there is not currently published data on exactly who in the game industry uses Twitter, individuals in some jobs such as the game press or in marketing positions are required to use the platform as a part of their jobs. Indie developers and AAA studios alike use Twitter accounts to promote their games. Others are in positions that discourage discussion of game-related opinions on the platform because many studios do not want their employees to be perceived as speaking badly of competitors' games or of potential consumers for their own games and products. Some developers, particularly those in under-represented minority groups, may opt out of using Twitter and other social media platforms as a way to avoid harassment. In choosing Twitter as the platform for analysis I am able to include the voices of many in the data

set for this research, but it is inevitable that some perspectives that will be left out either because they choose not to use Twitter or because their companies have restrictions about how they use the platform.

While the #1ReasonWhy hashtag was the topic of dozens of press articles in games, technology, and mainstream media, to-date it has not been widely discussed in academic publications. Given the recent prominence of discussions around the roles of women in games in conjunction with the GamerGate controversy, the timing is right for research studies that examine the experiences of women in the game industry. Analysis of this conversation can serve as an important starting-point for theorizing how we might be able to design for more supportive, positive trajectories for the future generations of women in games and technology.

Data Collection, Selection, & Analysis Procedures

I collected the data for this study using the Twitter search, monitoring, and analytics engine Topsy—a certified platform for Twitter-related data and analytics. Using Topsy and a Python script to pull the data, I was able to collect every Tweet that made use of the #1ReasonWhy hashtag. From the date of the first #1ReasonWhy Tweet on November 26, 2012 to the date of data collection on October 22, 2014 there were 36,864 Tweets using the #1ReasonWhy hashtag. A Python script aided with stripping out duplicate Tweets, called Retweets⁷. I opted to remove Retweets for two reasons. First, this process significantly reduced the number of Tweets in the data corpus, generating a more reasonable amount of data for qualitative research. Second, I wanted to give equal weight to all voices who participated in the

⁷ Retweets are duplicate Tweets that are similar to forwarding an email. One user posted the original content, but another user may want to share that Tweet with their network and therefore Retweets it to their followers.

conversation since one of the reasons that this work is important in the first place is that many marginalized voices go unheard in the game industry. Because Retweets can be a useful metric in determining which types of topics resonate with participants of this conversation, I generated a list of the ten most shared Tweets in the #1ReasonWhy conversation, outlined in Appendix A. The majority of these Tweets were coded for broader cultural phenomena rather than specific contexts like education spaces and industry events. This makes sense given that broader cultural phenomena are likely to resonate with a greater number of people compared to context specific Tweets that may only resonate with small groups of people who can relate to the specific context.

The remaining data still contained many Tweets that were part of the #1Reason conversation, but which were not useful for answering the study's research question. For example, many of these Tweets shared links to articles: "Check out this post on my blog where I share about the reasons why women aren't in game development." Other Tweets were summaries of the conversation, but which did not contain any of the reasons why: "Reason Why is about misogyny and sexism in the game industry." While these statements are true, they do not offer much value for analysis, so I opted to remove these Tweets from the data set. Finally, I filtered out Tweets that did not contain the word "because," or some variation on the word, since Tweets that did not contain any type of causation clause were much less likely to provide data that can be classified as a reason why. These revisions to the script generated a reasonably seized data set for qualitative analysis —1,920 Tweets.

I chose qualitative coding and analysis techniques for this research because I believe that the deeply personal stories and experiences shared through #1ReasonWhy are best analyzed through a lens of close-reading and careful attention to the words of this conversation's

participants. Deeply understanding the content of the #1ReasonWhy conversation provides a meaningful platform for understanding the challenges experienced by women in games.

Adopting Saldaña's (2013) stance of "pragmatic eclecticism" (p. 60), I approached the data with an open and flexible mind in the initial data collection and coding phases. Using Descriptive Coding to assign basic labels to the data and to generate an inventory of topics (Saldaña 2013), I formed "bread and butter" categories (Turner, 1994, p. 199) to reveal the various contexts that the Tweets centered around. These include:

- Game Content
- Education Settings
- Industry Events
- Workplace Experiences,
- Treatment of Female Game Players
- Commentary on Game Cultures
- Discussion About the #1ReasonWhy Discourse

These categories emerged as the major coding categories, and from these I generated a variety of subcodes for each. I utilized the qualitative data analysis software MAXQDA for the iterative process of coding and memo writing. For a complete list of codes, code definitions, and examples of each code, see Appendix B.

As a researcher, I share Saldaña's (2013) view that coding data can be used not just to simplify and reduce data, but also to generate concepts, ideas, relationships, and theories (Coffey & Atkinson, 1996). With that in mind, I utilized codes and memos to generate short snippets of creative writing from the data. There is precedence for using creative forms of writing in qualitative social science research, including poetry (Prendergast, 2015), theatre (Saldaña, 2008;

Meyer, 2009), and other narrative forms (Sandelowski, 1991; Nielsen, 1995; Tedlock, 2013). In the analysis for this research, I combined several Tweets that had been coded for the same concept to generate short paragraphs of monologue written as if they are from perspective of a single woman. I also created short scripts formatted like focus group interview conversations, using the words of #1ReasonWhy participants to write the script. These monologue paragraphs and focus group scripts are located in the findings section below.

In cases where I quote the Tweets, I sometimes made small modifications to the text to correct grammatical inconsistencies, to expand abbreviations, or to replace slang with standard American English phrases. However, I did not make changes that altered the meaning of the Tweets, as the greatest affordance of using qualitative methods is that it allows me to work with and quote data in participants' own words. For more information about how I combined the original Tweet data into these paragraphs and scripts, see Appendix C. This Appendix also contains two tables showing the original and transformed data side-by-side.

Findings

The #1ReasonWhy conversation spanned myriad spaces and contexts, including educational spaces and classrooms; game development studios and workplaces; and industry events. Participants also discussed what it is like to be female in online play spaces and outlined their interpretations of issues and themes around gender and sexuality in game content. Finally, Tweets in #1ReasonWhy offered various critiques on the broader cultures and discourses around games. While the various sources of context for the discussion are diverse, Tweets about these differing spaces share many of the same themes, weaving the conversation and its participants

together in a tapestry of shared experiences. I have synthesized these into three predominant themes, which I extrapolate in detail in the sections below. The three main themes are:

1. Women are evaluated on a different set of standards than their male counterparts, and by criteria other than their professional contributions and accomplishments.
2. Women are denied the recognition of status and expertise that their male colleagues enjoy.
3. Women's voices are silenced, dismissed, and made invisible, making them feel that they do not belong.

1. Women feel that they are evaluated on a different set of standards than their male counterparts and by criteria other than their professional contributions and accomplishments.

In my male colleagues, I see men confident that they fit into their man's world. In myself, I see an outlier trying to fit into a world that isn't mine. Belonging. Belonging is hard. Where he is brave, I am confrontational. When he is considered honest, I am judged as aggressive. Where he is deemed strong and powerful, I am accused of overreacting and causing drama. He gets to be just a man. I am considered a bitch. He is ambitious. I am a bitch. He is a leader. I am a bitch. He is decisive. I am—again—a bitch. And finally, when his peers judge him as self-assured and confident, I am, (sigh), again perceived as a loud-mouthed bitch. The moment I'm anything less than patient, generous, and kind, I'm an angry and unreasonable bitch. Belonging is hard for a bitch like me.⁸

⁸ This paragraph is composed of several different Tweets from women describing their feelings on being judged differently from their male colleagues for the same behavior. To emphasize how many women expressed similar experiences, I combined many different Tweets into a single

A common struggle shared by women in the #1ReasonWhy conversation is a struggle to fit in. They often feel that when they behave in the same way as their colleagues, their actions are interpreted more negatively. This inability to achieve belonging derives not just from how their behaviors are perceived, but from a variety of ways in which they are evaluated by a different set of standards compared to their male counterparts. These evaluations take on many forms, including judging women on their dress and appearance, their relationships with male colleagues, and gender in and of itself. This sense of being evaluated on factors other than their qualifications and their accomplishments is a substantial source of frustration to many women working to build careers in the game industry. Below, I outline some of the more common issues in more detail.

What (Not) to Wear

“I have to spend twice as much time selecting what to wear to industry events than I do for dates.”

Women in games feel evaluated—even scrutinized—on how they dress. Answering the dilemma of “What to wear?” is no simple task. The feedback that women receive about their dress is often contradictory and confusing. For some women, sex appeal is a strategy for career advancement. One woman explains she was told she would go far in the game industry if she just “slapped on some heels and sexed it up a bit.” A male Tweet writer admits that he was saddened when female colleagues felt they needed “to flirt and dress provocatively to get ahead.” He says, the “saddest part is it worked.” Another developer reports feeling empowered by her choice to start wearing “fierce heels & skinny jeans to meetings” because it “scared the boys club.”

monologue paragraph, but each of the adjectives and descriptions comes directly from the Tweet data by participants.

Others have had less success with the strategy of sex appeal. If you're perceived as wearing something "too short," "too showy," or "too bright," you're a "glorified booth babe," one woman writes. Others report obscene comments if they dare to dress up for the office holiday party. For some women, masking their sexuality is a coveted strategy: "I go out of my way to dress frumpy at cons in the hopes that it will deter people from bothering me while I work. It doesn't." Another writes, "I changed things about how I dress, down to my glasses, to be seen as an equal and not a piece of ass." While individual women might differ in how they approach dress in professional spaces, the prominence of Tweets about it reveals that it continues to be a source of confusion and anxiety for many.

Evaluated on Appearance & Relationships With Men

"I'm not his arm candy, motherfucker. I make games."

Throughout the #1ReasonWhy conversation there is a sense that regardless of what a woman looks like, she will be judged. These judgments permeate through all areas of the industry. Attractive gamers are accused of being fake geek girls—women who pretend to like games and geek culture to garner attention from men. At conferences, women report that men will come talk to them after they speak on a panel only to comment on their appearance, not what they had to say. In development studios, attractive women are told they were hired because they are nice to look at, because they have nice breasts, or because they are assumed to have had sex with someone in exchange for getting their job. Some women have encountered colleagues who imply they were only hired as a potential sex partner for male colleagues, or for casting in the studio's promotional videos. "My career performance is evaluated based on how hot I am," one woman says. "The hotter I'm considered, the less competent I must be." Those that are not

judged to be attractive report being criticized unreasonably, such as being “scolded for not being hot.”

Appearance-based judgments are particularly prominent in Tweets about how women are represented in the games press. Women report that their male colleagues are admired for their development skills while women are more likely to become the object of fans’ romantic affections. One developer notes, “I’m either allowed to be a sexy game personality or a respected one. I can’t have sexuality *and* be respected.” When they are not judged on their appearance, it is often assumed that women’s presence can be explained by a sexual or romantic relationship with a man in the industry. One game designer shares that the first question she was asked on her very first interview was, “whether I was dating a different male designer.” Giving unpopular answers to interview questions can make women “subject to attacks on their appearance and personal life.”

Female journalists report similar experiences. “When I ask guys to name a woman in game journalism,” one Tweet says, “they usually say, ‘Who’s that hot chick from IGN?’” Another Tweet shares about a publication that would reportedly bring an attractive female journalist along to interviews with a certain developer “because he liked to look at her.” Finally, female journalists cite accusations of having sex with public relations representatives for review copies of game titles. These issues in journalism continue to persist, as is evidenced by their prominence in the recent GamerGate controversy where indie developer Zoe Quinn was falsely accused of exchanging sexual favors for favorable press about her game *Depression Quest*.

Some of the Tweets in the #1ReasonWhy conversation speculate that this issue derives from trends in game content: “Female characters are a walking punch line, judged on their looks,” leading to the “same judgment for women in the industry.” Essentially, because female

game characters are so over sexualized, the same kinds of judgments are applied to real women in the industry. As women work to be taken seriously as professionals, they face a constant barrage messages telling them that they are only there to be looked at and valued for their potential as a sexual or romantic partner.

Tokenized

“You can’t just be a game developer. You will always be a female game developer.”

Often women in games feel defined by gender. A variety of Tweets express exasperation with the label *girl gamer*. “My partner is never a *boy* gamer,” one woman writes. Women working in the industry report similar feelings. Rather than be called a game developer, women are often referred to as “female game developers,” or even “girl developers.” Being defined in this way makes many women feel added pressure to be successful. “When he loses at Street Fighter it’s because *he* sucks,” one woman says. “When I lose at Street Fighter it’s because *girls* suck.” Similarly, a game designer notes, “If I succeed, I’m exceptional. If I fail, I’m proof that women shouldn’t be in the industry.”

Women are particularly vulnerable to feeling tokenized in conference settings. “No dude ever got this email: ‘We really want a guy on this panel and you’re a guy.’” Women, however, frequently report being asked to participate because of their gender rather than their accomplishments. Other Tweets express exasperation that women are more often asked to speak at conferences “about being women” than they are about the games they make or the skills they possess. Similarly, women report being asked to give interviews about gender issues, but feel passed over when it comes to interviews on game design. One woman shares, “I only get quoted in Forbes when I talk about gender.”

Double Standards

“My male colleagues are allowed to occasionally be obnoxious, silly, immature, annoying, drunk. I’m not.”

Double standards are a prominent theme in the #1ReasonWhy conversation. As players, women report feeling forced into roles that are considered feminine: “girls are good healers, but terrible at anything else.” They also feel pressured to relate to male characters because most game characters are male, but find that male players resist the idea of relating to a female character. Finally, female players express a double standard for physical appearance: “Guys don’t ask if the other guys in chat are hot as a precursor to all other questions.” Another woman notes that “Fake gamer vs. real gamer...doesn’t happen when an attractive man plays games.”

Some students talk about teachers having double standards, steering women toward softer sciences or the humanities when they are struggling with difficult concepts in their STEM (Science, Technology, Engineering, or Mathematics) classes, but encouraging male students to persist. One woman says, “Every advisor I spoke with tried to steer me away from computer science.” As developers, women report feeling like they have to work hard to prove their competence and commitment to their work. Workplace Tweets reveal an ingrained boys club culture that women struggle to adapt to. Some women feel that they have to “join the boys club, wear hoodies, and enjoy drinking beer.” This does not mean, however, that women are supposed to act exactly like the men they work with. A prominent journalist explains that in professional social settings, there are different standards for women’s behavior: “My male colleagues are allowed to occasionally be obnoxious, silly, immature, annoying, drunk. I’m not.” With all of these double standards for what is considered appropriate, women find themselves in an intricate dance with too many complex steps.

2. Women are denied the recognition of status and expertise that their male colleagues enjoy.

A second recurring theme in the #1ReasonWhy conversation is that women feel that they have to fight unreasonable battles to be afforded the same recognition of their status and expertise that male colleagues enjoy immediately. This theme was particularly prominent in Tweets about educational experiences, industry events, and game industry hiring practices.

You're in the Wrong Class, Sweetheart

"I was told, 'the Word class is next door.'"

For many women, being denied expertise mars their experience before even finish their undergraduate or associate degrees. Sexism and other exclusionary practices seem relatively common in institutionalized education spaces. The Tweets suggest that the first day of a new class is an especially tempestuous time, with women reporting a plethora of negative comments and experiences:

- "I was asked by two students and the professor if I was in the right room."
- "The professor chose to humiliate the only girl in the class on the first day. Me."
- "A teacher asked me if I was a man-hater out to cause trouble."

Women in game design classes also report students and teachers skeptically questioning whether they are really gamers, or making snide assumptions that they only play casual games. With both their technology skills and legitimacy as gamers called into question, it is no wonder that women choose not to enroll in—or drop out of—game design courses. This hostile classroom environment is made more difficult by the fact that many women find that they are the

only female student in the class, leaving them without allies to face these challenges (Margolis & Fisher, 2002).

Are You a Booth Babe, Or Are You the Girlfriend?

“Everyone assumes you're the girlfriend that someone brought along.”

When describing their experiences at industry events, many women reported encounters where they are assumed to be “tagalong” wives or girlfriends. These incidents occur even when women are wearing badges with their professional title on them, or clothing with their employer’s logo. Other women report being mistaken for administrative staff, marketing representatives, or booth babes—models hired to advertise games at industry events. Some women feel the practice of hiring women as entertainment at industry events damages them professionally because they are assumed to be booth babes at events where they are presenting games they worked on as a developer.

At presentations with male colleagues, women frequently report that questions about the game are directed to the men only. “After the director pointed me out as the lead designer, press would rather ask male soldier models⁹ for info,” one woman describes. Not surprisingly, women are frustrated when their gender is interpreted as a sign that they are not experts or professionals. One woman’s story describes that a security guard attempted to escort her away from a game design competition, assuming that she was in the wrong place. Later that day she won first place in the competition. Though often accidental and inadvertent, these incidents are particularly

⁹ A male soldier model would be the male equivalent of a booth babe, a man, likely from a modeling agency, who was hired to wear a costume at the game conference or event. He is not a developer on the game and has likely not even played the game he is representing.

damaging because they suggest that women are not seen as legitimate professionals in the industry where they work.

Why I Was—Or Wasn't—Hired

Hiring situations can be particularly perilous for women in games. Frequently, they become occasions where women are not taken seriously and are denied recognition of their professional status. Using content from real Tweets in the data, I constructed an example of how a focus group discussion might go if you gathered a group of female developers together and asked them, “Why were you, or weren’t you, hired for your job in the game industry?” In the conversation, you can see examples of women being denied expertise, but also being evaluated on their appearance and other criteria having nothing to do with their skills. The text in this script comes directly from the Tweet data.

Woman: “I was told I was hired because I’m a girl.”

Woman: “I was told that I wasn’t hired because I’m a girl.”

Woman: “Always a ‘girl.’ Like it would kill them to think of us as women. Or, God forbid, a colleague!”

Woman: “They told me I was hired because I’m hot.”

Woman: “And then they say it’s probably because you were sleeping with the boss.”

Woman: “I hate that it becomes about who you’re supposedly sleeping with.”

Woman: “Obviously you couldn’t possibly want a job in games unless it’s because you’re sleeping with some man in the industry.”

Woman: “Or, they hire attractive women to keep around for press ops and promo videos.”

Woman: “They hired me because they think I’m not hot. An attractive woman would be too distracting to the team, they said.”

Woman: “My boss hired me because they wanted more girls in the studio.”

Woman: “The boss said he didn’t want more girls in the studio.”

Woman: “I hear all the time that I was hired because I have boobs.”

Woman: “The women in my office make 10k-20k less for the same position.”

Woman: “Oh yeah. My husband is getting paid more for the same work.”

Woman: “They were amazed by my technical knowledge. Women usually don’t have that, they said.”

Woman: “I was told there aren’t many women in games because they’re hard to find. They generally aren’t smart enough they said.”

Woman: ‘We already have enough cuties in marketing,’ they said. I say, “I didn’t apply for a job in marketing.”’

Woman: “I applied for a job as a computer programmer. ‘No secretaries needed,’ they said.”

These three contexts—the first day of class, introductions at industry events, and hiring situations, are all examples of how first-impressions turn into situations where women feel denied recognition of their expertise and professional status. These frustrations were among the most frequently reported reasons why women do not want to work in games.

3. Women's voices are silenced, dismissed, and made invisible, making them feel that they do not belong.

The most salient theme across the #1ReasonWhy conversation was that women are silenced, dismissed, and made invisible with an overall message that they do not belong in games. Of all of the major themes in the #1ReasonWhy Tweets, these recur most frequently and across the most contexts. Some of these messages and forms of silencing are subtle, while others are overt. Listed below are just a few examples of explicit statements that women report hearing about why they do not belong in games:

It's a guy thing. It's not a girl thing. They're no good at tech stuff. They can't program. They don't know anything about games. They don't like—or even care about—games. It's not proper for women. Women ruin things when they play or make games. Women would only play games to get attention. Girls just don't do that.

Harassment

One of the more common ways in which women are silenced and dismissed or made to feel that they do not belong is through harassment. Reports of harassment as a cultural norm pervade across many different contexts in the conversation. These contexts included online play; school; industry events and conferences; workplaces; and press articles.

Harassment In Online Play

“Tits or GTFO (get the fuck out) isn't just an Internet meme. It's a way of life.”

In online play spaces, women report being harassed for their gender, for their usernames, for their dress, and for winning game matches. This harassment takes on a variety of forms,

including, but not limited to: being mocked dismissed or fetishized; receiving unsolicited advances and innuendo; death and rape threats; or stalking. For some women, this harassment deters them from playing in online spaces or leads them to choose to hide their gender.

Harassment At School

“Sexual harassment and sexist jokes are the norm at game design schools.”

Many of the #1ReasonWhy Tweets about educational spaces describe the forms of harassment that women encounter in their classes. Examples include calendars with pictures of naked women hanging on the classroom walls and reports of being groped by fellow students in class. Speaking up about uncomfortable experiences frequently results in female students being told to “buck up.” One Tweet shared success when a “larger cohesive group of females” in her game design class was able to persuade the guys to “stop pretending like they own the place,” but unfortunately, many women lack that larger group of women to support them. Many of these women instead pursue classes in other types of programs.

Harassment At Industry Events & Conferences

“Every woman I know has a story about being verbally or physically harassed when we dared to attend an event on our own.”

Among the Tweets about game conferences and events, 15 percent referred to uninvited advances from men in the industry, and more than 10 percent were by women expressing why they do not feel safe in these spaces. These Tweets shared stories of being groped or touched inappropriately, being propositioned, or a general aura of sexism. Frequently, women expressed that exchanges of contact information for what was intended to be purely professional resulted in

men contacting them to flirt or ask for a date. Others shared that a conversation with a man at an industry event has resulted in him misinterpreting the conversation as consent to engage in sexual activity. Women have developed strategies for preventing these negative experiences by verbally exchanging lists of men to avoid being alone with or using safe words to share with allies for getting out particularly uncomfortable conversations and situations. Others report not attending these events without a male escort, or even opting not to attend at all.

Harassment At Work

“Sexual harassment is the social norm and female developers are expected to play along.”

Many women—maybe even *most* women—report having delightful, supportive colleagues, but the experience is not ubiquitous. Below are some of the experiences reported from game industry workplaces:

- *“When I avoided a co-worker that kept hitting on me, I was told I should give him a break.”*
- *“When my co-workers get drunk and touch or hit me, I’m told to calm down.”*
- *“When a male game developer sexually harasses me, all the men who heard and saw pretend like they didn’t notice.”*
- *“A male co-worker of mine still has his job after stalking a fellow female co-worker for two years and admitting to it.”*

While these types of incidents are hopefully exceptional and rare, they are not unheard of. Unfortunately, many of these incidents are not taken seriously. Many women express exasperation because they feel they lack support from male leadership in their companies. The majority of these Tweets stem from cases where leaders passively let sexism slide. For example,

by not speaking up when developers complain about there being “a vagina” in the meeting.

However, in some cases these statements of aggressive and overt sexism come from the leaders themselves. For example, one woman reports that the man interviewing her for a job noted that it is a “waste of time hiring women because you waste five years training them for them to run off to make babies.”

A second frequently reported occurrence is that sexist behavior is dismissed as a joke. One woman shares that she feels unable to protest invasive questions about her sex life, because her colleagues were “just joking.” Another woman explains, “Any time I drink with my co-workers, someone jokes about raping me.” Because these types of harassment are presented as a joke, women are frequently dismissed for being too serious if they talk about them. They may be told to calm down, they might be asked if they are on their period, or they could be treated as if their response is disproportional or irrational.

Harassment in Online Communities & Comments

Sweet fiery Jesus popsicles, have you looked on any gaming forum ever? Argh! Argh! The comments in every single gaming site’s article about this hashtag make any decent human’s eyes burn. That right fucking there is #1ReasonWhy—because there are people who can suggest throwing acid in a woman’s face and get away with it. Suggesting that people are marginalized and abused gets you marginalized and abused. Anonymity provides a safe screen behind which pre-existing sexism can be played out without challenge.

According to many #1ReasonWhy Tweets, the best explanation for why women are deterred from or choose to leave the industry, is the nasty content in online comments. The

comments contain backlash and insults, as well as threats of rape and violence. Finding them to be overwhelmingly dismissive, hurtful, and just all around “absolutely horrible,” many women avoid reading the comments on articles and interviews that they are featured in. One woman shares that she will not let her mother or daughter see her social media because of the bile leveled at her. Others choose not to share their articles and interviews with friends because of the potential backlash in the comments.

Speaking Out

The overall effect of not taking women’s claims seriously, or even punishing them for speaking up, means that women often choose not to speak up about negative experiences that they have had for fear that it will risk their jobs or damage them professionally. The paragraph below is constructed from Tweets that women shared about why they hesitate to speak up about the negative experiences they have had in games:

If I speak out about the negative experiences I’ve had in games, my professionalism will likely be called into question. It will impact not just my reputation, but also hurt my future opportunities. Speaking out is proof that I am too sensitive or dramatic. It means I am confrontational, volatile, and a bitch. Speaking out will be interpreted as an act of betrayal and proof of my feminine weakness. It results in me being mocked, harassed, threatened, and punished. If I speak out, I justify my exclusion and risk my employment. I do not speak out because it is intimidating, scary, even terrifying. Doing so could damage, even cripple, my career. I do not speak out about the negative experiences I’ve had in games.

Out of all of the ways in which women's voices are silenced across the game industry, in my mind, the most damaging is the widespread fear that women have about speaking up. If the game industry wants to be more inclusive of women in games, there must be efforts to mitigate the negative consequences for women who share their experiences.

Time to Embrace Diversity & Respect

"I've been called a bitch, a whore, a cunt, fat, and a lesbian for playing and wanting to make games."

Many of the Tweets in the #1ReasonWhy conversation are not tied to a specific context such as industry conferences or the workplace, but rather speak to a general culture of sexism that caters to, and legitimizes, hetero-normative male fantasies. "The [game] community trivializes and demeans the experiences of women and those outside the hetero-normative tradition," one Tweet shares. For many women, it is a source of frustration that the men in the communities that they work and play in lack awareness of their privilege. One writer shares, "A lot of dudes genuinely don't seem to realize that being a white, heterosexual male is playing life in easy mode." Another expresses, "Men fall back on years of privileged experience without noticing when the opportunity to create change comes around." There is a sense throughout the Tweets that #1ReasonWhy represents an opportunity for change. No longer satisfied to accept the excuse that "it's the way it naturally is," these Tweets suggest an unwillingness to accept a culture that "reinforces misogyny and hate," and where talking about discrimination is "met with sarcasm, hate, or revulsion." It is time to demand diversity, these Tweets insist.

Unfortunately, many in the industry are frustrated by slow progress due to "a very vocal, loud, and obnoxious minority [that] believe diversity will spoil their fun." This is absolutely what

we have seen in the recent GamerGate controversy, and it is an issue that was prominent in the #1ReasonWhy Tweets: efforts at fostering diversity are met with dismissal and rejection.

“Attempts to build community, vent frustration, and express solidarity are dismissed as pointless whining,” one person shares. Another expresses that leaders calling for diversity in games are “vilified and dismissed.” “We are answered with violent threats and demeaning slurs when we dare to suggest inclusive changes in the industry,” says another. Though met with less forceful resistance, other Tweets express frustration with a more passive response—people simply not recognizing the need for change as important or real. “Every time I talk about inclusiveness, men ask, ‘Why bother?’ instead of ‘Why not?’”

Regardless of the difficult struggle ahead, many Tweets suggested potential avenues for change. Some called for developers and publishers to embrace the idea that a diverse workforce is beneficial. Others called for a rejection of the status quo and a more widespread understanding that things are not currently fair or balanced. Arguing “change requires honesty, empathy, and willingness to confront our assumptions,” these Tweets call for people to speak up, stand in solidarity, or work to develop different perspectives. The majority of solutions point out the need for respectful discourse and discussion. “The discourse gets conflated and complex discussion condenses and snowballs into a generic backlash.” One Tweet concludes, “We need better talk.”

Discussion

The goal of this study is to identify how members of the game industry account for why women leave careers in game design or choose not to pursue them in the first place. Analysis of the #1ReasonWhy Twitter conversation revealed three core themes that weave through the threads of discussion: 1). Women are evaluated on a different set of standards and by criteria

other than their professional accomplishments; 2). Women are denied recognition of their expertise; and 3). Women's voices are silenced, dismissed, and made invisible in ways that may cause them to feel they do not belong in games. While certainly these are not the experiences of *all* women in games, they have been harmful to a great many women and they absolutely deserve to be taken seriously.

By judging women with different standards, denying them status as experts, and dismissing their voices, women have to work harder to become, and recognized as, game industry professionals. Through research exploring the process by which people become engineers, Reed Stevens and colleagues (2008) discovered that engineering students need to not just identify themselves as engineers, but also to be recognized by their community as an engineer. The act of *identifying* as a professional is essential, but so too is being *identified* as one. Not being recognized as professionals could result in many women in the game industry failing to recognize their value, and therefore to fail to take advantage of opportunities to perform at their full professional potential.

Stevens et al. also identify pathways for learners to navigate if they are to be recognized as professionals. To become engineers, engineering students navigate institutional pathways such as getting a university degree in an engineering field. Analysis of the #1ReasonWhy conversation reveals that navigating institutional settings is a huge source of discomfort and anxiety for women in games. In gameplay environments, their skill and dedication as gamers is interrogated. In classes, their competence with class content is questioned. At events, their role as a professional is challenged. In job interviews, their ability to fit into the office environment is doubted. Across contexts, women face attempts to discredit them and are made to feel suspect at every turn. For many women, the professional pathway in a games career is a perilous one.

As an initial investigation of the themes throughout the #1ReasonWhy conversation, this study is primarily about identifying the issues—discovering what reasons the game community offers for why women are *not* in games. Knowing the struggles that women face as gamers and game industry professionals, and understanding the reasons why the industry fails to recruit and retain women is important. These understandings can play an important role in forging solutions.

The overall goal of this research is to offer educators, researchers, and industry stakeholders with the background and context to start moving toward those solutions. My hope is that this effort will gather many different collaborators who are eager to debug some of the current challenges for women in games. The game industry is a creative enterprise comprised of many of the world's most talented developers and designers. I am optimistic that others will be able to take these findings about the challenges that women face in games and turn them to creative iterations and innovative solutions.

Failing to take the issues prevalent in the #1ReasonWhy conversation seriously could lead to an egregious loss of talent from the game industry. Women and their allies are likely to leave games and seek out work environments that they find to be more professional, respectful, and welcoming of diversity. Games have a tremendous potential for their value as an entertainment medium and platform for artistic expression, as well as serving as educational tools and catalysts for pro-social and mindful activity. A collective effort by scholars, educators, and industry leaders to address the de-professionalization and silencing of women in the industry could go a long way toward promoting productive work environments across the industry, creating robust social spaces for gamers, and empowering developers to be able to make better, more inspiring games.

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Need to Succeed: Women Share Their Reasons to Be in Games

Target Publication: *Beyond Barbie & Mortal Kombat* book chapter

“No matter how many reasons we have to hesitate, we have more reasons to succeed.” – Tweet in #1ReasonToBe conversation

The roles and representations of women in the game industry have been a popular topic in the game press and popular media in recent months. Highly publicized cases of threats and harassment against women in games have led some women to question whether it is worth it to pursue a career in the industry. As a result, industry leaders, scholars, and educators are increasingly more interested in discovering how we can support women and other underrepresented groups as they pursue careers in games. That women are underrepresented in the game industry is not news (Edwards et al., 2014), but there has been surprisingly little research on the experiences of women in games. Existing research explores the gender divide in technology fields broadly (Barker & Aspray, 2008; Cohoon & Aspray, 2008), but there is very little research on women in game design more specifically. This relatively sparse body of literature focuses on one-time game design efforts with younger girls (Kafai, 1996, 1998; Denner, 2007; Denner & Campe, 2008) or specific industry issues like crunch time¹⁰ (Consalvo, 2008). Gaps in the research do not address the need for understanding the experiences of women

¹⁰ Crunch time is a common practice in the gaming industry when the development team is perceived as being behind on the development timeline and the developers are encouraged or required to work over-time hours. Some development studios have reputations for planning crunch into the development cycle, essentially expecting that all projects will reach a point where the team is required to put in crunch hours.

who pursue—or attempt to pursue—careers in games. This lack of broader knowledge about the pathways and expectations of women in games leaves researchers and educators with under informed understandings of the resources that women need to persist in the face of specific challenges they may face while navigating careers in the game industry.

Why Women Are and Aren't In Games

In late 2012, the social media platform Twitter was home to a conversation centered around why so few women choose to pursue—or remain in—careers in the game industry. Under the banner of the hashtag #1ReasonWhy, the conversation emerged as a response to Kickstarter community manager Luke Crane asking his Twitter followers why there are so few women making games. See Figure 1 for the original Tweet. People from across the game industry and game-playing communities contributed to the resulting discussion about what women experience in online game-playing spaces, at game industry events, in game industry workplaces, and in the media. My recent work examines the #1ReasonWhy conversation, exploring how members of the game industry and game playing communities account for why so few women choose to pursue and stay in careers in game development.



Figure 1. Tweet that inspired the #1ReasonWhy conversation in the Fall of 2012.

Analysis of the #1ReasonWhy conversation revealed that women are evaluated on a different set of standards than their male colleagues. Women's professional contributions are often obscured by a focus on their physical appearance or their relationships with men in the industry. They also struggle for recognition of their expertise. At industry events, people are likely to assume they are accompanying their romantic partner rather than attending as an industry professional. At work, they receive comments suggesting they were hired because of their appearance or their gender rather than because of their accomplishments. Finally, women's voices are frequently silenced, dismissed, and otherwise made invisible through persistent acts of harassment and a culture where speaking out about negative experiences is discouraged and even punished. When taken individually these incidents might feel like minor inconveniences, easily overcome. However, over the span of a career, they can be exasperating, disheartening, and humiliating, leading many women to leave games to pursue other career fields.

Exploring these reasons is important, but the reasons why women leave games comprise

only part of the story. Some readers of the #1ReasonWhy conversation felt that by focusing on reasons why women *aren't* in games, the discussion missed the opportunity to discuss another important issue: why women *are* in games. Among these was developer Rhianna Pratchett, who initiated a new thread of conversation for female developers to share reasons and stories about why they choose to stay in games. See Figure 2 for the original Tweet. Taking up its own following, this sister conversation gathered under the banner of a new hashtag: #1ReasonToBe. This chapter explores the #1ReasonToBe conversation in greater detail, unraveling what reasons current and aspiring female developers provide to argue that women belong in games and that they can build satisfying, fulfilling careers in the industry.

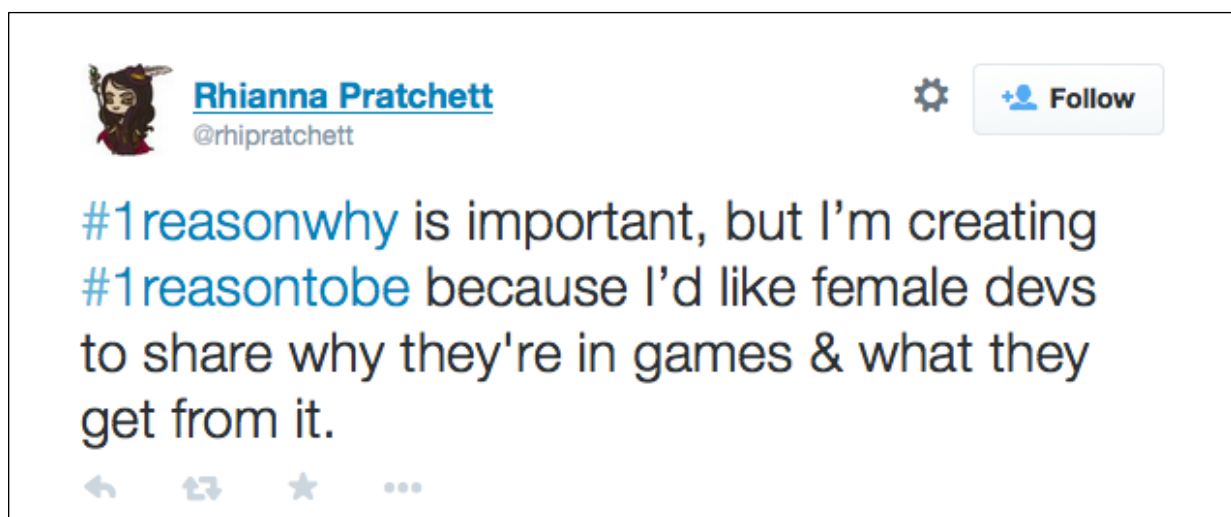


Figure 2. Tweet from developer Rhianna Pratchett initiating the #1ReasonToBe conversation.

As scholars investigating gender, race, and sexuality in games and game communities, it is sometimes easiest to see the things that are broken. There is no shortage of stories of sexism, racism, and harassment in games. Game characters and game players alike experience objectification, stereotyping, and both metaphorical and literal violence. My work aims to

understand the experiences of women who work in games to support researchers and industry stakeholders in theorizing how to make meaningful improvements to game cultures and industry spaces. Sometimes that requires diving deep into the darkest corners of game cultures and communities. But it can sometimes mean the opposite too. Exploring the parts of game cultures that are not broken can be equally valuable. In this paper, I explore women's reasons to be in games. What do female developers love about the games they play, the companies they work for, and the career paths they have chosen to pursue? Understanding why women choose to pursue and persist in careers in games can prove useful to educators looking to engage aspiring female developers, enabling them to incorporate women's interests and values into the design of new curricula and learning programs.

Twitter Data

I collected the data for this study using the Twitter search, monitoring, and analytics engine Topsy—a certified platform for Twitter-related data and analytics. Using Topsy and a Python script to pull the data, I was able to collect every Tweet that made use of the #1ReasonWToBe hashtag. From the date of the first #1ReasonWhy Tweet on November 26, 2012 to the date of data collection on October 22, 2014 there were 10,745 Tweets using the #1ReasonToBe hashtag. A Python script aided with stripping out duplicate Tweets, called Retweets¹¹. I opted to remove Retweets for two reasons. First, this process significantly reduced the number of Tweets in the data corpus, generating a more reasonable amount of data for qualitative research. Second, I wanted to give equal weight to all voices participating in the

¹¹ Retweets are duplicate Tweets that are similar to forwarding an email. One user posted the original content, but another user may want to share that Tweet with their network and therefore Retweets to their followers.

conversation. One of the findings from my research on the #1ReasonWhy conversation that there are many ways in which marginalized individuals are excluded and silenced in the game industry and I aim for my work to give voices to those who most need them. By giving special attention to certain Tweets, I would be inadvertently contributing to those silencing practices.

After the data filtering process, the remaining data still contained many Tweets that were part of the #1Reason conversation, but which were not useful for answering the study's research question. For example, many of these Tweets shared links to articles: "An amazing blog post from a woman VP/Creative Director for the #1reasontobe discussion." Other Tweets were summaries of the conversation, but which did not contain any of the reasons to be. Since these do not offer much value for analysis, so I opted to remove these Tweets from the data set. Finally, I filtered out Tweets that did not contain the word "because," or some variation on the word, since Tweets that did not contain any type of causation clause were much less likely to provide data that can be classified as a reason why. These revisions to the script reduced the ten thousand Tweets down to a few hundred.

I chose qualitative coding and analysis techniques for this research because I believe that the deeply personal stories and experiences shared through #1ReasonWhy are best analyzed through a lens of close-reading and careful attention to the words of this conversation's participants. Deeply understanding the content of the #1ReasonWhy conversation provides a meaningful platform for understanding the challenges experienced by women in games. Adopting Saldaña's (2013) stance of "pragmatic eclecticism" (p. 60), I approached the data with an open and flexible mind, in the initial data collection and coding phases. Using Descriptive Coding to assign basic labels to the data and to generate an inventory of topics (Saldaña 2013), I formed "bread and butter" categories (Turner, 1994, p. 199) to reveal the various contexts that

the Tweets centered around. I utilized the qualitative data analysis software MAXQDA for the iterative process of coding and memo writing. For a complete list of codes, code definitions, and examples of each code, see Appendix D.

Three Kinds of Reasons To Be

The 140 character stories, perspectives, and arguments that comprise the #1ReasonToBe conversation are unquestioningly diverse, but they largely coalesce around three predominant themes. The first category of reasons is motivated by a love for games. These Tweets celebrate games as a magical, creative medium. The second major theme of the conversation has to do with people and support communities. Some women derive their support from the broader games community, while others feel valued by their colleagues. And for many women, the reason to be in games is their fans and players. Finally, a large portion of the #1ReasonToBe Tweets were about changing cultures and building futures. These Tweets express hope for a better future for the next generation of girls and outline what individual men and women in the industry are doing to affect change in their own unique ways. See Appendix E for a graph depicting the frequency of specific codes.

1. For the Love of Games

“I do what I love and I love what I do.”

Some women are in the game industry quite simply because they love games and they are inspired by creating them. For these developers, making games is empowering, exhilarating, and sometimes “freaking brilliant fun.” They tackle Monday mornings with a sense of excitement and anticipation and describe their current work as their dream job. “I have dreamed of doing

this since I was old enough to know what an RPG¹² was,” one woman says. For these women, conversations about what is wrong in games, like #1ReasonWhy and the more recent GamerGate controversy, do little to deter them from pursuing their passions. “I’ve dreamed of this job since I was little,” says one woman, “and a few sexists don’t cancel out all of the great people in the industry.” For some of these designers, there is no other option but to be in games. “The only way I’ll give up the video game industry,” one woman explains, “is when they pry it from my cold, dead, rheumatoid arthritic hands.” What fuels this unrelenting passion for games? These women love games because they enable them to express their creativity and explore a medium laden with possibility and potential.

Creativity. The ability to express creativity through game design was one of the more common reasons to be. These Tweets describe a sense of gratitude for having the opportunity to work in a creative industry. “Every single day I have been in this industry I know I have an amazing career surrounded by creative, inspiring people,” one woman explains. Another expresses, “I’m excited to go to work every day because I get to create things to entertain people.” For many women, the opportunity to write stories and create worlds, and then be able to share experiences, makes all of the challenges of being a woman in the game industry worth it. One woman describes that, “Creativity knows no genders. Diversity makes better stories.” By contributing their own unique creative ideas to games, many women feel empowered by the content and stories they create.

A magical medium. Some women find that their reason to be is because “games are uplifting and magical.” Many women experience a sense of possibility, opportunity, and magic through making games. Describing games as “the perfect medium for storytelling,” these Tweets

¹² An RPG is a role-playing game, a genre of game where players take on the role of a fictional character in a fantasy or otherwise fictional setting.

show that some women experience a profound sense of excitement and wonder from making them. Whether it is the potential for games to solve social problems, stimulate new ideas, or their ability to influence culture in positive ways, there is a shared sense of hope and possibility in the medium. “There’s no other medium capable of delivering such exploration, action, adventure, and drama,” shares one woman. Another describes, “There are vast landscapes within our minds that also deserve to be played, seen, shared, and heard.” These #1ReasonToBe Tweets suggest that for some women, these magical, exciting properties of games outweigh the trepidation they might feel about working in an industry that so many women struggle in. Others find their passion in people.

2. Great People & Support Networks

“99% of the people rock.”

While some women love the creative process of making games, others draw their inspiration from the people around them. Whether from satisfied players, great colleagues, or a supportive community, these women find their reasons to be in games from other people.

Players. For some women, the reason to make games is to spread a sense of joy and wonder to players. These Tweets express how wonderful it is to “bring a game to life for a player and see them enjoy it.” One woman writes, “If my stories resonate with one person, it’s all been worth it.”

Colleagues. Many women claim that their reason to be in games is the great colleagues that they get to work with. Though the #1ReasonWhy conversation proves that a supportive work environment is by no means ubiquitous, or perhaps even the norm for game studios, many women cite that they are “lucky to work where women are valued team members.” These Tweets

describe teams and colleagues that are smart, intelligent, creative, talented, fun, and even “outrageously awesome.” Having access to male colleagues who serve as allies makes them feel respected as developers and team leaders. Some of the Tweets even express that fellow developers are like family: “Finding the right company, the right teams, and colleagues, it’s like finally coming home.” Similarly, another woman explains, “Finding the right team can be pure magic and an experience that will make your heart sing.”

Community. Other Tweets are less about specific companies, teams, and colleagues, but are more about an overall positive experience with broader game communities. Many women describe supportive online communities and amazing friends. These women have found the game industry to be a place where they feel they belong. Of course, this does not mean that these women have had universally positive experiences in games, but overall they find that the positive moments outweigh the negative experiences. They describe having “more people supporting me than in my way.” The overall sentiment is that, “for every sheathed misogynist, there are loads of respectful, funny, and brilliant men and women to work with in game development.” Some of these Tweets offer words of advice to women thinking about working in games: “Don’t let bad apples dissuade you from going for it.” Another shares, “All the trolls in the world won’t spoil the awesomeness of working with amazing people on equally amazing games.”

3. Changing Culture & Building Futures

“You can’t get the pie from the orc if you don’t show up to the party. Or something like that.”

Finally, for some women, loving games and loving the people in their game communities important, but are not the primary driving force for being in games. Many women desire a change in the culture of games and they are determined to play a part in creating that change. One of the core themes in the #1ReasonToBe Tweets is movement toward change. These Tweets

range from game playing enthusiasts expressing their support for change, to developers sharing about how they are implementing changes in their companies, to industry hopefuls who want to contribute to a new era for games. The Tweets express many variations of the theme, “My presence here is changing the industry,” and I am “making an impact to change how women in the game industry are treated.” The predominant sentiment is that “games are evolving toward incredible places” and women want to help “pave the path for a more egalitarian future.” In these Tweets, there is a sense of momentum, with women expressing strong desires to play a part in determining the new direction. For some, that drive comes from a hope for a better future for the next generation of women in games.

Better future for girls. For many women, their number one reason to be in games is not about their individual trajectory or personal gain. It is more about their little sisters, their daughters, and their nieces. It is helping to build a brighter future for the girls in their lives who love games. Some of these Tweets are even for daughters who have not yet been born. “I want to show my hypothetical daughter wonderful games where girls can be the hero and not the damsel in distress,” one woman writes. The common theme is that many women want to serve as a source of inspiration for the future generation of creative young women designing new universes and play spaces.

The lack of role models for girls in games is a source of exasperation for many women. Parents “have to hunt to find strong female role models for their daughters,” one Tweet describes, “and they’re not finding them here.” Women who grew up hearing that games are not for girls do not want girls of the next generation to be burdened with these same kinds of discouraging messages. Wanting “little girls to know that they too can be epic and strong,” many of the Tweets about the future for girls are hopeful about the possibility of change. “I want girls

of the next generation to have amazing game experiences where they aren't told they're sex objects," one Tweet shares. By working to change the culture now, these women hope that girls will "never have to face the dark side of gaming culture" that they themselves have had to navigate. "The best solution to the problem," expresses one Tweet, "is educating and nurturing the future generation of game developers." The #1ReasonToBe conversation reveals a plethora of different ways that women are finding to contribute to the future of games. Many advocate for hearing women's voices and others find unique ways to speak up.

Hearing women's voices. One of the changes that drives women's reason to be in games is a sense that women's voices are finally being heard and that their contributions are being recognized. These Tweets draw on an emerging sense of empowerment caused by the attention that the #1ReasonWhy and #1Reason to be conversations have garnered in the game press and mainstream media. The perception is that this momentum will "help people think about another perspective" and give women a voice that is louder and stronger than ever. One woman draws her inspiration from "knowing that as I sit at my desk plugging in each word, other women I admire are doing the same thing." These Tweets express that "everyone should have a voice in games," and the hope is that #1ReasonWhy and #1ReasonToBe will help provide the platform for women to finally have their voices heard. But those voices are only heard when women voice them in the first place.

Speaking up. One of the ways that women are working to drive the change in games that they want to see is by speaking up. A woman shares, "I just quietly pointed out inadvertent sexism online, and it changed. Simple apology and edit, no shouting." While some women have found games culture to be hostile and laden with harassment, others have had more positive experiences where speaking out about sexism leads offenders to reevaluate their words and

behaviors. Throughout the #1ReasonWhy Tweets there is a feeling that change is possible. “We can change the status quo and we will,” one person shares. These Tweets are not mired in the same beaten down discouragement that permeates through much of the #1ReasonWhy conversation. Many members of gaming communities hold on to their hope that change is possible and that if gamers and game developers are willing to continue to fight for it, it will come.

Throughout #1ReasonToBe, there is a belief that everyone has a role to play. For some, that role is being an ally and helping to support the cause. These people are not necessarily developers themselves, but nonetheless use their voices to show their support for women in games. “I welcome more women in games because they are awesome and they bring new things to the table,” one person shares. Another argues that female game developers are an essential part of growing a healthy industry: “We all need them if we want this industry to grow and evolve.”

Among the #1ReasonToBe Tweets, there are a variety of ways that women are finding to contribute in personal, meaningful ways to the growth and evolution of the game industry. A student shares her belief that as one of three women in her game design program, she has the ability to make a difference in the classroom culture. Female developers have a variety of ways to contribute. Some share how they approach the design process in ways that affect change. “Make a few avatars be something other than white male or porn stars,” one woman shares. Another plays her part by working to “catch at some of the bizarre sexist crap that creeps into projects I work on.” Over time, these small changes add up. “Every time you speak up and stop unintentional sexism,” one developer shares, “you made a game better.”

For some developers, contributing to change is not about contributions to game content,

but is about fostering a better workplace or online culture. To have her voice heard, one developer explains, “Sometimes you need to drop a passionate f-bomb in a meeting.” Another Tweet is from someone who has worked with their company to develop more productive ways to have a positive discourse with fans. By making these changes, the hope is that “We are ushering in a heightened awareness of equality that will actively permeate company cultures and game culture.”

Change never comes easy. As game communities have seen in recent months with the GamerGate movement, things may get worse for women in games before they get better. Pervasive throughout the #1ReasonToBe conversation is a determination to persist and a widespread belief that changes to game cultures and communities are worth fighting for. “Nothing worthwhile is ever easy and nothing easy is ever worthwhile,” one Tweet expresses. “I live life at the point of the spear and not from a cozy corner,” another shares. “It’s just who I am. And wow, is this ever pointy!” Game culture can indeed be pointy for those advocating for change, but #1ReasonToBe shows there are game developers, game players, and other industry advocates that find diversity and inclusivity in games to be worth fighting for.

Placing this conversation in context with its counterpart, #1ReasonWhy, it seems that one of the primary goals of #1ReasonToBe was to make this case that the fight for diversity and inclusivity is worth the effort. The #1ReasonToBe conversation emerged as a direct response to the #1ReasonWhy conversation, serving the intentional function of counterbalancing the discouraging experiences that many women reported. By starting #1ReasonToBe, Rhianna Pratchett was specifically fostering a conversation to address the positive experiences that women have had in games.

It might initially seem like the two conversations cancel one another out—one conversation paints a bleak picture of what it is like to be a woman in the game industry and the other implies that it is a wonderful industry with fulfilling work and supportive colleagues. The truth is, of course, that they both present accurate depictions of real women's experiences in the game industry. The findings of these two studies taken together do not cancel one another out, but rather they show that there is no singular or universal experience that all women have in games. Just as women themselves are diverse in their interests, skills, and talents, so too are their experiences. Some women are fortunate enough to find fulfillment in their work that justifies the long hours and have colleagues that they feel at home with. Others are in positions that are more demanding and even grueling and others struggle to fit into office cultures and environment that are not welcoming or accommodating. Some women have experiences and opinions to contribute to both conversations—having stories to share of moments where they have been victims of sexist comments or workplace discrimination but also speaking about how they love making games and have had many colleagues that have been nothing but supportive. Both conversations have been productive in engaging game playing and game development communities in dialogue about important issues in the current game industry environment and both conversations ultimately reveal that there are many reasons to work for change.

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Combating a Million Messages About Not Belonging: How Women in Games Are Supporting Women in Games

Abstract

Gender inequities in technology-based industries such as games have become a topic of mainstream conversation in recent months. Scholars, educators, and industry stakeholders are all interested in understanding how we can foster inclusivity and diversity in game communities and create educational pathways that better support young women with emerging interests in games and technology. This article reports findings of a qualitative research study investigating the learning pathways, experiences, and expectations of women in various roles across the game industry. In-depth interviews with participants reveal that women in games share a common interest in making game communities and workspaces better for the next generation of female designers. Overall, participants' contributions to these efforts fall into four primary roles: educators, advocates, role models, and leaders. Seeing how game industry professionals conceptualize the issues, and understanding how they approach seeking solutions for women in games, can help researchers and educators design better programs, curricula, and interventions that support young women along their learning pathways.

Keywords

gender, game industry, video game culture, qualitative research, professional pathways

Girls in Games and Women in Tech

Gender is a hot topic in game and technology sectors right now. Discussions around the marginalization of women in tech and the representations of female characters in games are more

predominant and more mainstream than they have ever been. The recent GamerGate controversy, originally claimed by some to be a movement for heightened ethical practices in game journalism, was ultimately co-opted by a vocal minority that utilized the movement to perpetuate the ongoing harassment—sometimes called “emotional terrorism” (Cohen, 2015)—against several prominent female public figures in games. A number of notable mainstream news outlets covered the controversy, including The New York Times, Washington Post, CNN, ABC, and The Colbert Report. Experts in industry, research, and education, know that the underlying issues that drive these recent mainstream conversations are not new. The number of women graduating with degrees in computer science has been going down for decades (Vesgo, 2005; Hayes, 2010), female characters have long been underrepresented in games (Williams, 2009), and girls and women who play games at public events and online are no strangers to harassment. With these issues being amplified in the mainstream media, more and more people are interested in seeing change, but the question of what is to be done about this still looms large. Changing culture is no easy task.

While devastating to those whose lives have been personally affected by it, the GamerGate controversy has brought issues like the harassment of women in game communities to the attention of mainstream populations. We should not take the cost of that publicity lightly, but we would be remiss to miss out on an opportunity to utilize that momentum to bring positive change to education spaces, gaming communities, and game industry workplaces. There are many angles to explore these issues from and we need all stakeholders involved—including educators, researchers, advocates, and leaders—to take a variety of different approaches if we are going to see real positive change in the cultures around games and technology. Not everyone will agree about the reasons why these things matter, nor will we reach consensus on the best ways to

approach these issues. Some will argue for getting more women to study computer science and programming at universities. Others will seek change in the hiring and management practices in game studios. The possible directions are numerous, and universal consensus about the right approach is not necessary for there to be a collective trend toward positive change.

As a scholar in the field of digital media and learning with a particular interest in fostering inclusivity and diversity in game communities, I care about creating change in education spaces and learning communities. In my academic career I have done this in a variety of ways, such as running a women's hackathon on my university campus, doing research on a curriculum to teach kids game design (Hatfield et al., 2013), and working with an after school club for game design and programming (Ochsner & Anton, 2014). Many others have designed and implemented fantastic programs for engaging girls in game design, many of which I outline later in this article. These programs are immensely valuable in that they enable educators and scholars to foster students' interests in technology and to teach important skills around game design and programming. With the current momentum around topics in gender and technology, we can look forward to the design of—and research around—many upcoming efforts to empower girls with the tools and skills they need to be confident programmers, designers, and creators of games, as well as leaders in technology fields and the game industry. As more and more scholars and educators move in that direction, I believe it is important that we incorporate the expertise of the women who work in games now. What can we learn from the experiences of women who currently work in games to help us design better programs, more effective curricula, and ultimately, to support young women on a pathway to a successful career in games and similar fields?

In this article I report the findings of a qualitative research study investigating the learning pathways, experiences, and expectations of women who work in the game industry. For this research, I conducted in-depth interviews with 21 women who work in the game industry, asking about their pathways and experiences in games. Specifically, what has defined and influenced their learning pathways? What does it mean to the participants to be a woman working in the game industry? How did they become to a professional career in games and what were defining points along that pathway? Knowing more about the pathways that women take to game careers and the experiences they have in those roles may reveal what kinds of resources, support structures, and learning environments can be put into place to support more women in pathways to game design. I started this research aiming to generate ideas for what educators can do to empower young women—and I accomplished that—but I also discovered that each of the women I interviewed is also playing her own part in doing the same. I learned not just about these women’s trajectories, but also about their work as educators, advocates, role models, and leaders—all working to foster diversity and inclusivity in the industry they love. I outline these efforts in the findings, but first I outline past programs and curricula, describing what researchers and academics have already done to engage girls in game design and exploring what we have learned from those efforts.

Research Review: Efforts to Get Girls in the Game

Over the past few decades, a variety of research-based programs and interventions have sought to engage girls in game design. In this section, I provide a brief overview of some of the most notable game design programs and curricula for girls, outlining their findings, their successes, and the areas where they struggled to accomplish what they set out to do. Being

knowledgeable about past programs can be invaluable to contemporary educators, scholars, and designers looking to engage girls with game design and technology.

Among the first major studies on game design with kids was Kafai's (1996) Game Design Project, a six-month research project evaluating the gender differences between games made by girls and boys. In this study, Kafai explored which features of commercially available video games children included in the design of the games they created. Findings revealed more variability in games made by boys compared to girls, suggesting that boys had more commercial game influences to draw from. Girls, in contrast, are rarely featured as the main character in commercial games, a fact that was reflected in the design of the games they created.

Game designer Brenda Laurel makes a similar argument, explaining that video games give boys an edge in becoming comfortable with computers (Cassell & Jenkins, 1998). Whereas many boys grow up playing a variety of video games designed to cater to their interests and play styles, girls are more often alienated by the content of many commercial video games. This culminates in girls having, overall, less experience with computers and game systems, resulting in boys developing greater competence and confidence with technology at early ages. Recent reports on teens, social media, and technology show that the majority of boys and girls play digital games, but that boys are still somewhat more likely to play than girls. The most recent Pew report found that 84 percent of boys report playing games online or on their phones as opposed to 59 percent of girls (Lenhart, 2015).

The TechSavvy Girls Club was a two-year effort by Hayes and King (2009) to help girls develop information technology (IT) fluency by playing and modding¹³ *The Sims 2*. One of the

¹³ Modding games is the practice of making modifications to the code of a video game to change or add new content. Modding can include adding new items or levels, changing how the player character interacts with the game world, and a variety of other things.

goals of this research was getting—and keeping—girls interested in learning about digital technologies, combatting the trend of girls losing interest in technology during middle school. Research suggests that in middle school, girls face pressures to distance themselves from appearing too invested in technology because it becomes uncool to be seen as a “techie” or sometimes even to appear too smart (Gee & Hayes, 2010; Rothschild & Ochsner, 2014). The program supported girls in leveraging their existing play practices to develop IT fluencies such as learning 3D design, trying behavior modeling, managing complex systems, and practicing programming, all within the context of a participatory culture. By using a tool that is not immediately focused on programming, this project offered “a distinctive approach to technology-related learning, one that melds technical skills with emotional intelligence...which is essential for everyone in our high-risk, high-tech, complex, world” (Gee & Hayes, 2010, p. 62-63). TechSavvy Girls Club effectively challenged traditional paradigms of technology and re-envisioned them in a way that incorporated values traditionally aligned with feminine frameworks.

A collaboration between a team of computer scientists, interaction designers, and social psychologists, *RAPUNSEL* is a game designed to teach programming to middle school girls. The work was motivated by wanting to address prior failures to attract women to careers in IT fields and the team prioritized including girls’ perspectives in their design (Flanagan & Niseenbaum, 2008). The designers assigned values to desires expressed by their female players. For example, they translated girls’ desire to design and dress up characters with the values of authorship and creative expression. Additionally, the values community, autonomy, authorship, and collaboration came out of players’ desire to manipulate characters in the game to engage in deeper relationships with each other through flirting, dancing, and other social behaviors. At

times, the values that the girls expressed came into conflict with the project goals and values. For example, girls expressed interest in more complex social situations, but the team felt that focusing on social engagement tended to draw attention away from the programming activities in the game (Flanagan, Howe, & Nissenbaum, 2005). After its release, research on the game's outcomes showed a significant change in general self-efficacy and confidence about programming among girls, but not boys (Flanagan & Nissenbaum, 2008). It is difficult to determine whether these findings can be attributed to the team's commitment to incorporating girls' values into the design process, but nonetheless, considering the struggles that girls tend to face with feeling confident about their technology skills, it is encouraging that *RAPUNSEL* was able to boost girls' confidence with programming.

Designed to increase girls' interest and confidence in becoming producers of technology, the Girls Creating Games program pairs middle-school aged girls together to collaborate on designing a game. The program seeks to go beyond the skill-based technology education often taught in schools, which is often criticized for failing to provide students with opportunities to think critically and creatively with technology (Denner, Bean, & Martinez, 2009). Findings from the program's research team suggest that participating in Girls Creating Games led to a decrease in the negative stereotypes that participants held about girls and IT fields and an increase in their perceptions of their knowledge about computers. They also concluded that there is still work to be done to strengthen girls' assessment of gender stereotypes regarding who is good with computers (Denner, 2007). One iteration of the club included male students, enabling the researchers to compare games made by the girls and boys. They found that girls were more likely to engage players in narratives, social relationships, conversations, and pro-social problem solving. Boys' games more often focused on victory, competition or conquest, and utilized

fantasy settings. Many of the Girls Creating Game research team's findings corroborate what Kafai found more than a decade earlier with the Game Design Project. See Table 1 below for a summary of game features and values that girls tended to favor based on findings from these research programs.

	Game Design Project	Girls Creating Games	Purple Moon Focus Testing	RAPUNSEL	TechSavvy Girls
Alternatives to violence	✓	✓	✓	✓	✓
Challenge authority		✓		✓	✓
Complex narrative		✓	✓		✓
Experiment with identities	✓	✓	✓	✓	✓
Focus on social issues		✓	✓	✓	✓
Moral decision making		✓	✓		
Pro-social action	✓	✓	✓		
Real-world settings & contexts	✓	✓	✓		✓
Relationships over conquest	✓	✓	✓	✓	✓

Table 1. Game features and values that appeal to girls based on research findings from programs designed to engage girls with games.

A theme that spans across these game-based programs and interventions for girls is a struggle over values. The designers and academics who put painstaking effort into developing these programs and curricula want to respect girls' interests and preferences. Much of the research to come out of these projects aims to identify what girls care about. Kafai wonders, what kinds of worlds and characters do girls design into their games? Hayes and King take *The Sims 2*, a game immensely popular with female audiences, as their starting point for exploring,

how can we get girls engaged in trajectories of IT fluency? The *RAPUNSEL* team puts the question, what do girls value at the center of their design. Finally, Denner and the Girls Creating Games team conducted extensive research asking, what kinds of experiences did the girls have in pursuit of their goal of increasing girls' confidence as producers of technology.

Each of these projects encountered struggles—whether technical constraints, ideological tensions, or otherwise—in their efforts to incorporate and value girls' needs and interests. Hayes and King struggled with mixed feelings about using a game that is frequently criticized for reinforcing gendered stereotypes about women. Flanagan's team found that the girls' desire for social interaction deflected attention from their foremost goal of teaching the girls how to program. Denner and her collaborators experienced difficulties in presenting the pedagogical content in ways kept the girls interested in engaged. These kinds of issues come up across all kinds of learning interventions, but can require a special sensitivity when the developers want to take care not to reject or ghettoize the things their participants care about. All of these programs and interventions were designed with change in mind. These efforts are meant to challenge the status quo and bring more girls to the playing field of technology and media. And change, especially in the form of a directed effort to affect culture, rarely comes easy. There is much to be learned from the struggles that these scholars and designers faced, and from the choices they made when faced with them.

Theoretical Frame: Learning as a Pathway

Learning from the collective wisdom of the educators and scholars who have created programs to engage girls in game design, and who then researched and published their findings is a critical component in understanding how we can help level the playing field for girls in games

and technology. But learning such complex skills and developing identities as technologically competent and capable designers is a longitudinal process, spanning over many years and many learning contexts. Even with a vibrant history of great programs and research studies, scholars of games, technology, and learning are still struggling to understand the full complexities of the learning ecologies¹⁴ (Barron, 2004; 2006) that girls and women encounter throughout their educational trajectories. In their book *Women and Gaming: The Sims and 21st Century Learning*, Gee and Hayes (2010) argue for more detailed investigation of longitudinal learning trajectories. They explain:

We tend to think of learning as something done in the here and now, with all the action in the present: what does this learner know right now? The way we assess learning in school tends to encourage this point of view. But learning anything, at least anything deeply, always creates a history reaching far back into the past and extending out into the future. We should think of learning in terms of learning trajectories, or paths of development. (p. 91)

If we truly want to understand what kinds of experiences we should design for girls in middle and high school that will foster their identities as capable producers of technology or games, we need more research on the unique paths of development undertaken by women who came before them. Barron (2006) describes a “multiplicity of pathways among learning contexts that learners might take” (p. 200) depending on the learner’s unique configuration of interests, which are determined by the combination of ideational, social, material, and identity resources that the learner has access to. She shows that learning involves an appraisal process wherein

¹⁴ Barron (2004) defines learning ecologies as the “accessed set of contexts, comprised of configurations of activities, material resources and relationships, found in co-located physical or virtual spaces that provide opportunities for learning.”

learners appraise the fit of a potential learning direction by examining it against their sense of self and perception of their values. By understanding how female game professionals have navigated this process for themselves, we can better understand how to foster positive pathways for young women in the future.

Methods

Background & Context

The research presented in this article is part of a larger two-part study investigating the pathways and experiences of women in the game industry. The first study (Ochsner, in preparation) examines two conversations that took place in late 2012 on the social networking platform Twitter. This previous work explores the conversation around the #1ReasonWhy and #1ReasonToBe hashtags, which arose in response to one Twitter user posing the question: Why are there so few lady game designers? In that research I examine the industry's response to why women may choose not to pursue—or remain—in game design, as well as why many women choose to stay. While the strength of the Twitter research comes from being able to explore the breadth of the industry-wide conversations—analyzing Tweets from thousands of Twitter users—the research I report on in this article is designed to be complimentary to the breadth over depth nature of the first study. The interviews I present on here offer in-depth descriptions, perspectives, and reflections from women at a variety of different points along the way in their own unique career pathways.

Research Questions

This study is centered around three core research questions:

1. How do women in games describe their learning pathways to the game industry?
2. How do women in games describe their experience as a woman working in the game industry?
3. How do women in games describe their expectations for the future for women in the game industry?

The overall purpose of this research is to understand the learning pathways, experiences, and expectations of women in games. Specifically, what has defined and influenced their learning pathways? What does it mean to the participants to be a woman working in the game industry? How did they come to work in games and what were defining points along that pathway? Knowing more about the pathways that women take to the game industry and the experiences they have in those roles may reveal what kinds of resources, support structures, and learning environments can be put into place to support *more* women in the game industry, and to support them *better*.

Methodological Rationale

For this study, I utilized an interviewing strategy inspired by the open interview used in person-centered ethnographic research (Levy and Wellenkamp, 1989; Hollan & Wellenkamp, 1994; Stevens et al., 2008) and the three-part interview series outlined by Seidman in his book *Interviewing as Qualitative Research* (2013). Person-centered ethnography (Levy & Wellenkamp, 1989) is the methodology utilized by Reed Stevens and colleagues (2008) in their research on students' pathways through engineering programs. Arguing that research sometimes leaves people "parameterized by variables like gender, ethnicity, or learning style" in ways that obscure their individual pathways and experiences (2008, p. 356), Stevens and his team elected

to study a small number of individual student's pathways through engineering programs. They explain, "Our work leads us away from a singular concern for the numbers and percentages of 'types' of students who enter, stay, or leave engineering and toward the *qualities of experiences* [my emphasis] that students have" (p. 365). I chose this methodology as inspiration for this study primarily because of its focus on understanding participants as unique individuals.

One of the major components of person-centered ethnography is the open interview (Levy & Wellenkamp, 1989). In open interviews, the interviewer follows the lead of the participant. It is customary for the interviewer to intervene very little, except with questions that elicit "personal emotional reactions" (p. 223) such as "'How did you feel about that'; 'What did you feel like doing then?; What did you do?; 'Why?' and the like" (p. 223-224). Levy and Wellenkamp argue that conducting interviews in this way is ideal for enabling participants to share "rich material bearing on feelings and understandings about feelings and their transformations throughout various stages of life, on learning...on self-concept and on other such personally centered dimensions of experience" (p. 224). Since the goal of this research is to understand participants' learning pathways, follow-up questions tended to encourage participants to talk about memorable learning experiences or to elaborate on the various learning resources that were part of their sociocultural networks and learning ecologies, including people, events, and formal and informal learning tools.

In his book *Interviewing as Qualitative Research*, Seidman (2013) argues that interviews are the most effective way of accessing stories. He explains that stories, told through the "details of people's lives," are a "way to knowing and understanding" (Seidman, 2013, p. 1) and open up the possibility of subjective understanding (Schutz, 1967). As Seidman defines it, the purpose of in-depth interviewing "is not to test hypotheses, and not to 'evaluate' as the term is normally

used,” but rather enables the researcher to understand the “lived experience of other people and the meaning they make out of that experience” (p. 9). The point of using in-depth interviews in research is not just to understand the experiences of the participants, but also the meanings that participants ascribe to those experiences. Taking the lead from Seidman, I encouraged participants to reconstruct the details of their experience and encouraged them to reflect on the meaning those experiences had for them, seeking a deeply personal understanding. See Appendix F for a detailed list of questions that I used to guide the interviews.

Participants

The research presented in this article is based on in-depth interviews with women in games, examining how participants describe their pathways to games and exploring their experiences as women working in the industry. I spoke to 21 participants in total—20 women and one participant that identifies as gender queer. For this study, I recruited participants through reaching out to my personal network of industry professionals from my research career and former careers as a game industry I editor. I reached out to women I know personally, and I asked colleagues to recruit women they knew by sending emails or posting about the study to their Facebook pages and Twitter feeds. In some cases participants offered to put me in touch with other women in their network, so a few participants were recruited via snowball sampling. I opted to include the participant who identifies as gender queer because like the self-identifying women in this study, this participant’s experience is that of a marginalized individual in the game industry. As such, they share many of the experiences and perspectives of other participants in this research.

Person-centered ethnography is a labor-intensive research method that is not conducive to substantial sample sizes. Hollan and Wellenkamp (1994) explain, "Whatever this format sacrifices in terms of sample size and difficulty of execution, it more than gains back in terms of quality and breadth of data." (p. 10). They emphasize the quality of data collected using person-centered ethnography, critiquing the practice of speculating on what an observed behavior means without consulting with the actor on their interpretation and point-of-view. With the interviews I conducted for this research, the idea was to gain depth of understanding over breadth of data points.

Rather than focusing on only designers, producers, or programmers, I opted to speak with women who work in various roles across the industry. As part of the selection criteria, participants had to self-identify as a game industry professional and have worked in games as their primary professional affiliation for at least a period of a few years. I talked to designers, programmers, and producers, yes, but I also spoke with women in localization, quality assurance, and game journalism. I interviewed women leading non-profit organizations in games. I talked to CEOs trying to raise venture capital funds for their growing companies. Some of the women I interviewed have recently left their formal jobs in games, opting to change directions to pursue personal indie¹⁵ design projects or make a difference in the game industry in other ways as public speakers and advocates.

Participants are from all over the United States, including the Midwest, Northeast, the South, and the West. One participant was spending time in the United States with her US-based colleagues but primarily lives and works in a large city in Australia. To best understand the

¹⁵ Indie, or independent games, are games made by individuals or small teams without financial backing from a game publisher. Many game developers opt to make independent games to have greater freedom to pursue their own ideas or to focus on innovation.

diverse trajectories of women in games, I pursued participants with diverse histories, diverse experiences, and diverse values. As my goal is to do research that fosters equality, diversity, and inclusion across the game industry, it is important that my research seek out the collective wisdom that can only come from attempting to understand a diverse array of experiences, opinions, and perspectives. In my research, I place a high value on keeping close to the data, using participants' words as frequently as possible.

Interviews & Data Collection

The data for this study was collected over a period of six months, in four different states, including two game conferences, one academic and one industry focused. The majority of the interviews were conducted in-person—at coffee shops, over lunch, in hotel rooms, and in gardens near the conference venues. Three of the interviews were conducted over Skype. The conversations ranged from 40 minutes to nearly 4 hours in length. I recorded and transcribed each interview personally, ultimately generating nearly 500 pages of transcripts. As part of the transcription process, I assigned each participant a pseudonym and removed identifying information such as company names and locations. A few of the participants in this research required special care to preserve anonymity because they are well-known public figures, recognizable for their prominent roles in the GamerGate controversy. As many of the details of these participants' personal and professional lives have been documented in press articles and mainstream media coverage, I have removed and obscured certain details about these participants in order to preserve the anonymity of their identities.

Analysis Procedure

After completing transcription, I began analysis by completing one round of descriptive coding (Saldaña, 2013) on each interview before generating a more focused coding scheme that I applied to each interview in a second round of coding and memo writing in qualitative research software MAXQDA. The final coding scheme consisted of two different types of codes—pathway codes about participants’ personal and professional pathways through their education and careers, and value codes, for sections where participants talk about things and people they value. By coding for major themes in participants’ pathways and by identifying similarities and differences in the values of participants, I was able to identify shared themes and threads in women’s trajectories and experiences in the game industry. See Appendix G for a full coding scheme depicting the codes, definitions, and examples from the data for each code. In the next section, I outline major findings and conclusions.

Findings

In exploring the learning pathways, experiences, and expectations of women in games, one of the predominant themes that came up across almost every interview is that each participant is engaged in some kind of effort to promote better conditions and pathways for women in games. When talking with participants about their strategies as leaders, their values as developers, and the ways they spend their time, there is a common theme of wanting to leave a lasting positive impact on the game industry, particularly when it comes to making things better for women in the future. While there are a variety of other threads and themes across the interviews—including the widespread silencing effect that GamerGate has had on the industry, or that ageism and the challenges of motherhood in the industry—in this article I choose to focus

on the ways in which participants are working to contribute to a better industry for women. I selected this theme in part because it closely aligns with my goal of identifying how we can re-design education spaces to better engage young women in technology and game design. Understanding how female professionals from across the game industry think about their personal contributions toward educating and empowering other women, we gain a perspective not yet well-outlined in the existing research literature on girls and games or women in technology.

Just as the participants in this research have diverse pathways to games and diverse roles in games, so too are their contributions to making game-based play and work environments better for women. Some women care about creating educational opportunities, introducing girls to games and promoting professional development opportunities for students. Others have chosen to take on advocacy roles, speaking out publicly about issues around women in games or working behind the scenes on resources for people experiencing online harassment. Many women are contributing to making the game industry a better place for women by persistently pursuing the work they love and serving as role models for girls who strive to do the same. Finally, some women are taking leadership roles in their companies—raising capital to make games featuring powerful female characters and changing how they recruit and hire new employees in ways that are more inclusive and welcoming to women.

I break these different types of efforts and activity into four primary roles: educators, advocates, role models, and leaders. In the following sections, I describe in greater detail how the participants take up these roles, sharing specific examples of women sharing about their values, their beliefs, and their accomplishments. See Table 2 below for a broad overview of the participants, their professional roles, and their roles in supporting women in games.

Participant Name	Primary Industry Job	Role in Supporting Women
Andrea	Director of Programming	Role Model
Annabelle	Quality Assurance Lead	Advocate
Bethany	Chief Executive Officer	Advocate & Leader
Casey	Programmer	Role Model
Cassie	Game Designer	Role Model
Debbie	Artist	Role Model
Erin	Director of a Non-Profit Org	Educator & Leader
Eva	Game Designer	Educator
Grace	Game Designer	Role Model
Josephine	Indie Game Designer	Educator
Kate	Game Journalist	Role Model
Kim	Director of a Non-Profit Org	Advocate & Leader
Maggie	Chief Executive Officer	Advocate & Leader
Margaret	Game Developer	Advocate
Marie	Industry Recruiter	Educator
Mia	Chief Executive Officer	Leader
Natalie	Artist	Role Model
Naomi	Game Designer	Role Model
Teagan	Game Designer	Advocate
Savannah	Producer & Localization	Role Model
Sera	Quality Assurance	Advocate & Educator

Table 2. Interview participants, their primary industry jobs, and their roles in supporting other women in games.

Creating Educational Opportunities

I begin by describing how participants took up roles as educators, outlining how they work with programs to help games become a part of girls' possibility spaces, and discuss their ideas and efforts around professional development and career management.

Getting Games in Girls' Possibility Space. Sera believes it's important to create safe, inclusive, and supportive environments for girls that span from middle school to up through their first years in the game industry. She is involved with a number of education initiatives with groups like the Girl Scouts and youth groups. She says, "the key is reaching the girls when they're in middle school and junior high to combat the culture that says the engineering and math

stuff is for boys.” Sera has found that just showing girls that game design is fun and that it is an option for them can be really powerful. “Women are not this mythical thing in games, even if it looks like it sometimes,” she adds. She just finished co-managing a project where girls attended a workshop for game design and STEM skills. In addition to making and play testing games, they also had the opportunity to talk to female developers. “We saw a lot of girls coming out and saying, maybe I can be an engineer or maybe I can be a game developer,” she says. Eva shares a similar opinion, noting how much of an impact programs like Girls Make Games can have. “It just changes their thinking,” she says, elaborating:

It opens them up to, ‘If I’m gonna do a class project, I could do a poster. I could do a website. Or I could make a game.’ And when that’s a part of their possibility space, the change is big.

Josephine, an indie game developer who did not grow up with games or technology as a major part of her childhood, also believes that early exposure to games as a possibility space is a critical component to recruiting more girls. She expresses wishing she had earlier access to technology. “I never thought that I could make games,” she said. “I didn’t grow up with a console and I didn’t have a personal computer until I was 17.” In school, she says she only had access to word processing courses and there were not opportunities for learning to program. Having been diagnosed with a learning disability early on also put Josephine at a disadvantage. She explains, “A lot of the tech stuff was for the gifted kids. I was shut out of a lot of that. I thought, I can’t do that because they have the gifted kids doing that.” Josephine thinks that parents sometimes subconsciously encourage their sons to try out games and technologies while accidentally leaving out their daughters. When showing off their games at games festivals,

Josephine and her husband try to make sure girls get equal play time. “If they have their boys play first then we try to say to the girl, ‘You should play next because I bet you can kick his butt’.” While one small moment of empowering a single girl might not seem like it would have a substantial impact, many such moments throughout the course of a girl’s trajectory could make a powerful difference.

Professional Development & Career Management. Marie is a former game industry recruiter who is passionate about professional development. “I want to see everybody walking out of their university program knowing how to manage their career for the rest of their lives,” she says. In her time as an industry recruiter, she encouraged her clients to look at their entire career rather than focusing narrowly on getting a job. She explains:

It’s about doing the dishes rather than the taxes. You should always be doing a little bit of networking and interacting. You’re always doing a little bit of training. You’re always updating your LinkedIn profile. You’re always keeping your resume up to date. And if you do all of that, you’re more valuable to your current employer and you have a better sense of your own value.

Marie believes that the current system of how game development programs report placement rates is flawed. While schools report immediate job placements, she says there is no convention for reporting how long it took students to get their second or third job. Those figures, she says, would help us understand if programs are teaching students not just to do a job, but how to *be in* the job. Marie notes that while she cares about professional development for everyone, she wants to empower women in particular. “I want to empower women to feel like they have a better sense of self. They have a stronger sense of self so that they understand their path, they know where they’re going, and they know how to get there,” she explains.

Erin is the executive director of a non-profit organization that organizes professional development events and early career opportunities for students at a large university in the Midwest. She feels strongly about creating opportunities for students in her home state, where there are not many jobs for students hoping to go into game development. She explains, “There are no places locally to do internships. There’s no community of mentors. A lot of things are missing.” Discouraged by seeing students leave home to pursue game careers, Erin left her job in one of the university’s science labs to work full-time on growing the game organization so that it could more effectively meet student needs. The group now holds on-campus events every week, including workshops, career talks, panels, showcases, and a weekly lounge event where students meet to work on developing games together. They also have a library where students can check out games, consoles, computers with inaccessible and expensive software, and special equipment like virtual reality headsets. “Having these resources available and free for students is super important,” Erin believes. In addition to providing resources and scheduling professional development events, Erin’s staff also works with professors at the university to integrate games into their classes. The group’s next major projects are to add to their growing list of sponsors and to set up a workspace for indie developers. In the future, Erin would love to set up an incubator program where emerging indie companies hire students at the university, providing students an opportunity to do commissioned work for pay.

Erin describes that she recognized a trend where many students would say, I want to work in games, but I am not a computer science major, I am not a developer. Erin felt that the misconception that only people who are proficient programmers can work in the game industry was holding many students back from taking advantage of opportunities and pursuing careers in

games. “They shut down,” she says. Erin’s goal has been to show students that having diverse voices and skills make for good game design:

We need to find the communities of designers. We need to find the communities of artists. We need to find sound designers. We need to find all of these people and tap into those communities and bring them all together.

By bringing different types of people with different backgrounds in to make games together, the group was able to foster diversity and help students gain confidence, believing that they have something of value to contribute. She describes that, “For students, and for female students especially, finding a space where they feel like they have a support system and a safe space is tough.” Though it has not been easy, Erin’s organization has aimed to provide that space and that support network, and she hopes the students will continue to embody those values in the future. Erin describes, “This is how we feel like we can impact the industry, through students and student development.” By creating a community that centers on a positive culture that is welcoming to everyone, Erin hopes her organization will impact the industry in positive ways over time, putting respectful and socially conscious young people in leadership positions across the industry.

Advocating for Women in Games

Leading An Advocacy Organization. Kim is currently playing her part as an advocate for women and other under-represented groups in the game industry by serving as the executive director a game industry advocacy group. She took on the leadership position because she felt the group had started to lose its relevance and was not meeting its potential as an advocacy organization. She explains, “It became more of a big social group.” While there’s nothing wrong

with the organization serving a role for social networking, Kim felt that much more needed to be done, and that she could be the person to do it. “I want to see change happen,” she describes. “That’s my thing. I think we’re change agents. Every single one of us. That’s what we’re here for. And that’s what I’m trying to do.” She notes a trend in her career—“I see a hole and I fill it.” Over the past several months, Kim has worked to head up a number of new diversity initiatives, building new partnerships for the organization to advocate for greater diversity in games and the industry.

Promoting Genres for Women. Only after leaving her full-time job in the game industry has Annabelle found a new voice, promoting otome¹⁶ games and other women’s oriented media, including manga and comics created by female artists. Now that she is no longer working for game studios, which tend to have strict social media policies that restrict what employees can say about games and media, Annabelle describes feeling free to do whatever she wants with her online persona. At first she thought she would scare her friends and followers off by posting about non-mainstream media genres, but she found that most of her network has been really positive about it. She says, “Even when I Tweet the smutty stuff, it’s fine.” For Annabelle, it has been empowering to share about women comic artists and the game genres she loves. “I’m not embarrassed,” she says. “We’re owning it. It’s ours. We’re taking it back!” Being able to spread the word through her blog and game press sites about prolific female manga artists making stories for other women is especially empowering because “it’s very different from the industries here.” In a way, escaping the long hours and strict policies of her job in games has enabled Annabelle to have a stronger voice promoting games by and for women.

¹⁶ Otome games are a narrative-heavy game genre that focuses on forming romantic relationships with one or more of the game’s characters. The genre is popular in Japan and with female players throughout the world. Otome games are sometimes referred to as visual novels or dating simulation games.

Empowering Others With Story. Teagan is a gender queer indie game developer, artist, programmer, and advocate for marginalized game players and developers. Observing that the games they cared about are marginalized by the gamer community, Teagan observed first hand the “death of a thousand paper cuts and micro-aggressions” that has become a part of the rhetoric around women in technology. Their early experiences in games made Teagan realize “there was a general culture that is not overtly, but covertly, hostile to people like me. And women also. And anybody who isn’t of the traditional player demographic.” Rather than getting them down, Teagan was inspired to become an advocate for marginalized gamers who are under-represented in the current game market. “I’m an artist first,” they say. “But I empower other artists too because I want a community of people.” Teagan’s approach is to empower people to tell their own stories through interactive narrative. They explain:

Part of building a community is to empower, to create the community that you want to see. So if I empower the voices I want to see more of in my community, then educating them and giving them the tools to learn this stuff is really important.

In addition to empowering marginalized individuals to tell their stories through interactive narrative and gameplay, Teagan also advocates for game developers to take responsibility for the games they create. “Game developers have to be responsible,” they argue, adding:

Responsible for what kinds of messages our game designs send. Not even just the stories, but also what does the procedural rhetoric say? What are we teaching these kids by giving them all of these white male power fantasies? And giving them no consequences

for their actions? What are we perpetuating? What are we saying by representing women as background decoration or sex objects?

Teagan feels that they grew up with a lot of privilege, having a well-off family with access to good schools and computers from an early age. For Teagan, learning about game developers who grew up in poverty has been a powerful experience and they encourage others to educate themselves too. “Being a good ally takes a lot of work,” Teagan says. “It’s a process. I don’t believe in the idea of a good person or a bad person. But I believe that making the world a better place for everyone takes work.” Teagan believes games can be a powerful medium for people to tell their stories and for privileged individuals to learn about the struggles and experiences of those who are marginalized.

Being Behind the Scenes and Speaking Out. Growing up in a household that valued involvement with non-profit organizations and giving back, Sera says she never learned how to say no to volunteering. Currently, she is involved with anti-harassment campaigns, training for speakers, mentoring for girls, and what she calls general advocacy work for women in games. Many of Sera’s efforts involve behind the scenes work with organizations, campaigns, and special interests groups, but she says she also continues to speak out and “give voices for those who are voiceless.” She says many people are unable to speak out because of their company policies or because drawing attention to themselves may affect the custody of their kids, bring attention from an old stalker, or any number of other things that call for caution:

I’m at a place where, pardon my French, I don’t give a fuck. I’m going to speak up because I can. It’ll cost me clients or it’ll make things harder, but it’s worth it because I continue to get people saying, ‘I wasn’t speaking up before but now I am because you

showed me that we need to,’ or because ‘You made me feel like there were other people talking and I could join in and I wasn’t alone.’ And that’s the kind of stuff that makes you want to continue and want to move forward.

Sera thinks that many women would benefit from joining sponsorship programs with groups like the International Game Developers Association’s Women in Games Special Interest Group.

“Give them somebody to talk to,” she explains. “And create space spaces where they know they can go, they can talk, and know there are other women who have experienced something very similar.” Sera believes that this strategy could help combat the feelings of dismissal and that many women struggle with.

“It’s a million little messages,” says game developer and industry advocate Margaret as she talks about her frustration with how women in technology fields are treated. In a recent meeting, a company leader ended a meeting by laughing at her work for women in technology. “It was just a small moment for him,” Margaret explains. “Just something that felt like a joke to him. But it hurt me so deeply. And our careers have a thousand moments like that.” She describes her plans to make a women in tech simulator where the player is damaged all day long by negative things that women in tech go through. “You’re damaged. You’re hurt. If you run out of HP, you quit.”

Margaret’s style of advocacy involves speaking out publicly in the press and through social media avenues. Her advocacy work has made her a target of GamerGate and she has received numerous threats to her safety and her life. She describes the experience as traumatizing, explaining, “It’s been horrible for me. It’s hard to overstate just how hellish my life has been for the last five months.” She elaborates more on the experience and the physical,

mental, and emotional tolls that experience has exacted, but for the purposes of persevering Margaret's anonymity, I have chosen not to share additional details here.

Despite how awful these past months have been for her, Margaret says she would not be able to live with herself if she did not speak up. "This is worth risking your life for," she explains. "I feel like the question of if women can work in games is a question of if we can work in technology. This is where the human race is going. And if we don't get this problem under control now, it's going to really be bad in the future for women."

Margaret believes it is imperative that women stick together. She expresses that one of the ways that feminism fails is when people start to believe that their version of reality is the only reality. "I think the truth is that it's a spectrum," she says. "It's all of us. If you want to be a parent, that's great. I one hundred percent support you. If you want to not speak out and just do good work behind the scenes, I support you." She notes that she's idealistic about the concept of sisterhood and believes strongly in women supporting each other no matter what. "We need to be ruthless about promoting each other. I feel so strongly about that." Togetherness, Margaret believes, is what will ultimately conquer GamerGate and its supporters. "That's what scares the shit out of them," she says. "If we're all working together as a group, we will destroy this motherfucker."

Being a Role Model

Kate is an avid game player and a game journalist. Her love for games is a core part of her personal and professional identities. Because she is also a woman and a lesbian, Kate feels that sometimes she is pressured into taking on advocacy roles that she sees as distracting from her professional goals. She explains:

I get pigeon holed into the advocacy track and I'm like, okay, yes, I can bring an interesting perspective from being a woman and a lesbian in this field. But I'm going to be perfectly honest, being a lesbian is very personal to me. I get a little self conscious and embarrassed when I'm asked to write about it. I don't want to write about it. I got into the industry because I like writing about video games from an artistic perspective, from a critical perspective. I like games. Please don't define me by my gender. I will stand up if I can, but at the end of the day I sort of resent being put in that position.

This feeling of being pigeon holed is one that Kate has struggled with throughout her career. At the first press publication she worked at, she was interested in reporting on sports and was instead assigned to lifestyle content because it was seen as more appropriate for a female journalist.

While Kate continues to push back on these pressures to cover traditionally feminine content or to take on an advocacy role, pushing back also comes with some amount of guilt, particularly since the GamerGate controversy last Fall. She explains that because she cares about these issues, and is in a position to fight, but chooses not to, many would condemn her decisions and label her a slactivist—someone who cares deeply about an issue but does nothing about it. Her hesitation comes in part because of a negative experience last year where she received substantial criticism from readers after critiquing the rape imagery in a game she reviewed. She describes the blowback from the article as dramatic and notes that the experience made her gun shy in terms of speaking out about GamerGate:

In some ways I feel guilty because by being gun shy, and by keeping a low profile, and not wanting to get doxxed, and not wanting to get constant hate mail, and to not have people digging into my personal life, that I am being a coward. Because I am a journalist

and I should not be afraid. I should speak up for people like Brianna Wu or Anita Sarkeesian. I should speak up for what I believe in. It hasn't been easy. I have not been totally silent on the matter. I have condemned it on social media. I have generally re-Tweeted or posted stuff that's pretty decidedly anti-GamerGate.

Some of Kate's hesitance to speak up comes not just from herself, but also from extrinsic pressures. She explains that the editor-in-chief of the publication she works for ordered editors to not make the publication a target by publishing articles about GamerGate. Many game journalists were under similar instructions throughout the GamerGate controversy, being asked to avoid any and all GamerGate-related content in their writing and social media presence.

Women in a variety of roles in the industry described similar pressures from the companies they worked for to keep quiet on all matters relating to GamerGate. Many game studios and publishers put their employees under strict social media policies that do not allow them to criticize games or game culture at all. For others, the choice to not speak up during GamerGate is more personal. Savannah does not speak up because she lives alone and is afraid of being targeted in her home. Andrea does not speak up because she has young children and fears for the disastrous consequences that getting doxxed¹⁷ or swatted¹⁸ could have for herself and her family. Several of the victims of GamerGate have been doxxed and swatted.

Not wanting to be passive, these women have found other ways to have a positive impact without the same risks to their physical, mental, and emotional health. Casey makes games with

¹⁷ Doxxing is the practice of posting someone's personal information like a home address or bank account numbers over the Internet. It makes that person a target for harassment and identity theft.

¹⁸ Swatting is the practice of making a false report to an emergency service in order to bring an emergency response team like police officers, the fire department, or even SWAT teams and bomb squads to someone's workplace or residence. The intent is to induce stress, humiliate, and discredit the victim.

her little sister, showing her how she can use her passion for art to create interactive stories and games. Savannah mentors a young woman in high school who is interested in pursuing a career in games. Andrea is involved with technology-based programs at her son's school and visits local schools to give talks about being a game developer. Kate takes solace in the fact that her role as a successful female game journalist makes her a role model to girls who want to pursue a similar trajectory. She says:

If I can be a role model for other girls who want to get into the industry, who don't want to be judged on their gender, who want to be taken seriously, I like to hope that I can be that person. I like to hope that girls can look at me and go, Kate Barron is awesome and I want to be just like her. So maybe in that sense I shouldn't feel quite as guilty as I do because just by being visible I'm doing my part.

Kate and some of the other women I interviewed are contributing to the future for women in games simply by being in games. Through their continued commitment to staying in games by doing the work they love, these women are playing their part by being potential role models to other young women who aspire to a career in games too.

Women as Game Industry Leaders

Empowering girls and women with games. Of the twenty-one women I interviewed for this research, three are current or former chief executive officers (CEOs) of their own game companies. While their experience and their leadership strategies differ, each of these three women had one thing in common—they are committed to having their companies make games that empower girls and women.

Maggie is the former CEO of one of the first companies to market games to girls. Explaining her exasperation with the fact that most games at the time were made by men and for men, Maggie and her team aimed to “tell stories about girls and women that shatter the stereotypes of being one-dimensional.” One of the ways in which she accomplished this was getting constant feedback from players. Early on, she did one-on-one usability testing with girls to find out what they liked and disliked in existing games. They also did formal focus group testing and ultimately created an all-girl advisory board where they could get feedback throughout the entire development cycle of a game. They found that girls were playing a lot of shooters because it was the only thing out there, but that they did not feel like those games were for them. Girls were unused to being asked what they thought of games and sometimes responded, “Why do you care?” Maggie notes, “It didn’t seem like they felt like they had a voice. But I kept asking.” For Maggie, it was important to help girls learn to be articulate about what they want from their media experiences.

Mia is the CEO of a start-up game company looking to make free-to-play games that feature empowered female characters. Unlike many companies who are making mobile games that target women for a quick and easy profit, Mia describes wanting to release free-to-play games to make them more accessible to the audience she wants to reach and empower. Her company’s games reverse many of the common tropes and stereotypes. For example, having players play as the princess who saves a damsel-like prince. She explains:

We’re not doing it because we want to be Zynga. We’re doing it because we want to build games for women. And that’s a really different drive. Zynga wanted to make games for women too, but they weren’t building games for women because they wanted to use them as a tool for empowerment. We saw that social gaming is a space where women

already dominate. But they're being sent messages like, you can cook and clean all the time.

Rather than making formulaic games that perpetuate stereotypes about women, Mia and her team are committed to creating games that place women in positions of power and possibility.

Indie studio CEO and game developer Bethany is bored with the game industry. In her interview, she made an observation identical to something that Maggie said—that the industry is “made by men for men.” She describes the norm where “violence is the primary mechanic and games cater to adolescent fantasies about empowerment.” Craving something different, Bethany is interested in stories and in games that connect emotionally with characters. She explains, “I wanted to do a game that showed women being awesome and it's not questioned that they can be competent. They're not put into a girlfriend role or anything like that. They're out there and they're awesome.” In her game, women fill a variety of roles. A woman is a commander. A woman is the techie. A woman is the villain. A woman is the hero. For her, it is important that her games “let women be a range of things rather than girl being a personality.” Bethany despises media that feature girl as a personality type.

Though she is often accused of it, Bethany has no interest in wiping the Call of Duty games of the world off the face of the planet. She says, “It's not that we want to erase those. We're just saying, ‘This is our truth. These are the games we want to build. This is the consumer we're interested in. You go do your thing and we're going to go over here and do ours.’”

Maggie, Mia, and Bethany are all committed to making games that place girls and women in powerful roles and combat stereotypes about them being damsels or one-dimensional. However, each of these women has a unique strategy and set of goals around running their companies. Maggie works to foster collaboration and collective creativity among the people who

work for her company. Mia is passionate about supporting venture capital funding for female-led companies. Bethany is also seeking venture capital funds for her company, but she is more focused on her acquisition strategy of recruiting and retaining employees who are otherwise under-appreciated by the game industry.

Fostering Collaboration and Collective Creativity. “Creativity is my skill,” explains former game industry CEO Maggie. She describes that her talent as leader is crafting a story and bringing people together with a vision. As a leader, Maggie believes that meaningful success comes from creating a positive culture. “I’m so sick of white men ruling this world,” she says. “It’s so broken. For me, inspiring others is the ultimate reason for being here.” Maggie explains that at her company, “the culture that we co-created inspired the employees, the games, and the customers. We also made money.” In her time as a leader, Maggie noticed that people mimicked her behavior, which facilitated the conditions for collective creativity for her company. She describes, “I was open about when I knew, and more importantly, what I didn’t know. That was what allowed them to let down their guards to truly collaborate. I welcomed diversity from the top down. I learned how to draw out the talents of each person.” Everyone at the company invested in valuing and respecting one another. “If you have an issue with somebody, you don’t gossip,” she explains. “That was one of our rules. You move on so we can keep in creative mode.”

Maggie sees traditional notions of leadership where one person makes all of the money and takes all of the credit as absurd. Her focus is on changing the industry narrative. Instead of one person at the helm, Maggie believes that companies would do better with four CEOs collaboratively working together, or assigning someone the role of chief collaboration officer.

She also believes that everyone should assume a leadership role. In her ideal work environment, everyone embodies creative values and learns to be kind to themselves. She explains:

That's the only way we can be kind to others and authentically be respectful of others, by being that way to ourselves. We're not taught to respect ourselves. But once we can make that shift, and it takes practice in every moment, then we can facilitate the conditions for collective creativity. You don't have to be a CEO. You can do it anywhere you go.

For Maggie, changing the industry narrative can be fostered by fostering conditions for collaboration and collective creativity.

Funding for female-led companies. While the members of her small team have collectively launched more than 35 game titles, Mia is finding the venture capital scene to be brutally difficult to navigate. She was able to successfully raise capital for male-led companies that she has worked for, but so far has struggled to raise funds as the leader of her own company. She explains, "I did nine pitches last year. And people are like, 'We love what you're doing!' And 'You're doing everything right!' And yet, they say, 'We don't want to give you money.' It's really hard to hear no forever." While she cannot know if her struggles have to do with her being a woman, she says that people question her right to call herself a CEO because she does not fit their vision of what a CEO is. In her mid-twenties, she says she is sometimes told she is too young, but notes that no one bats an eye when twenty-year-old men use their parents' trust funds to fund their own start-ups. Mia explains that for female leaders in games the predominant feedback is that, "You're too young until you're too old."

For Mia, the most effective way to empower women in the game industry is to support more women leaders. And the key to that support is funding for their companies. She describes, "The decision makers right now are not us. We're not the people who can make these changes.

We have to solve that problem first before we can have things like an area for women to breast feed.” Theorizing on how to empower more women as leaders, Mia notes:

It has to be solved with money. And the reason it has to be solved with money is because you can’t start your own business without money. It’s legitimately impossible. It’s going to take more than just people saying, ‘Yay, I support you’.

Maggie is contributing to changing things through her persistence to getting funding for her own company and her leadership role with a scholarship and mentorship program that seeks to support diverse groups of young industry leaders.

Investing in women. As a leader, one of Bethany’s main priorities is to have a management style and a company culture that is inclusive. Like Mia, Bethany is currently working to raise venture capital funds for her company. She notes that her talent acquisition strategy for the company is to recruit and invest in people who are otherwise pressured out of the industry because of the lack of work-life balance. She says the industry fails to recognize that people are more, not less valuable at age 30, and it frustrates her that industry is so incompatible with parenting. Instead of recognizing their value, the industry pushes parents and experienced developers out the door. While she is not a mother herself, Bethany is committed to a workplace culture that is steeped in pro-mother policies.

Bethany’s strategy when recruiting and hiring new talent is investing in people. She notes that the problem with most of the industry is that when a typical male executive is making a hiring decision, he looks at a narrow set of things:

When he hires people, he looks on a piece of paper and asks, ‘What school did you come from? What is your background?’ And it’s this very narrow pipeline and it’s very easy for men to get into. And because there are all of these leaks in the pipeline along the way,

women fall through the cracks. We don't think about all of the social pressures that girls get starting in elementary school. And you have women start leaking from the pipeline in high school where they're pressured to be silent. And then you're 20 and you go to college and the boys are terrible. And you get your first job and you're seen as a sex object more than a professional. And then you turn 30 and you don't get support as a parent. Then ageism starts kicking in. And it's this whole disastrous chain of events. I believe that when a woman falls through the cracks, you say, let's put you back in. I'm going to invest in you and give you a chance to catch up. And then you're building talent instead of trying to acquire talent. We have to invest in people.

This strategy of investing in people is one that Bethany is highly committed to, and so far it has paid off well as an organizing principle for how she runs her company.

In many ways, the myriad strategies that each of these women employ to make game industry spaces more diverse and inclusive are about investing in people. Whether it showing girls that games can be a part of their possibility space, empowering marginalized groups, or one of the many other strategies, an overarching theme is investing in people to invest in positive change.

Discussion

Working on issues like recruiting more women to degree programs in games and computer science, or getting more women into the game industry and supporting them throughout their careers, is not easy. These are complex issues and they inevitably have complex solutions. This study investigating the trajectories and experiences of women in game design helps shed some light on how professional women in the industry think about these issues.

Findings revealed that working to build better environments for women in the future is something that the majority of participants care about. In addition to their efforts to bolster their own professional trajectories, the women in this study spend a lot of time thinking about other women. For some, being successful in their careers, and therefore being a role model to girls in the future, is a way to contribute. Others commit further time and resources to empowering women in additional ways, such as advocating for the voiceless, helping marginalized groups share their stories, or empowering girls and women with professional development tools and funding to build companies. Each of these efforts contributes to making women visible in games and empowering them to share their stories, create inspiring content, and develop as successful professionals and leaders.

These women's stories serve as a starting place for exploring their efforts in greater detail. Many of the efforts raised in this article deserve greater attention from scholars in games and digital media. For example, what are the specific challenges to women-led companies looking to raise venture capital funds to build their companies? What professional development opportunities are most useful or most needed in various higher education programs in universities and in game design programs? What kinds of early exposure to game design and programming are most effective in engaging girls' interests over an extended period of time? What we need from future studies is investigations of the specific contexts, spaces, and strategies outlined by the women in this research. Exploring how the participants of this research are doing their part reveals a lot about what educators, researchers, and industry leaders can do to bolster their own contributions toward fostering diversity and inclusivity.

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Paving the Way for Future Learning: Implications for Educators & Education Research

As a researcher and scholar interested in understanding learning pathways over time, I believe there is much that can be gained through thinking about how the findings from this research could be applied to support girls and women along those pathways. In the following section, I outline six recommendations for educators; researchers; program and curriculum coordinators; and other education stakeholders. I derive these recommendations directly from the Twitter and interview data, generating them from trends and themes in the Tweets and from the experiences of the women I interviewed.

Each recommendation consists of two parts: 1) An outline of the problem that the recommendation targets; and 2) Initial suggestions for how we might address that particular challenge. Each of these recommendations is a suggestion for change, but also a potential opportunity for future research. I decided not to divide the recommendations up by education level, such as separating those with implications for K-12 education from those that are pointed more toward institutions of higher education. Many of these suggestions cross those boundaries. However, they are roughly organized by what part of girls' and women's educational pathways they are most relevant for. The first suggestions are more applicable to the early phases of a learner's educational pathway, and the later ones tend to be more relevant for young women further along in their learning pathways. Just like the women in the interview study are taking on their own unique roles to promote positive change in the game industry, so too can these recommendations be addressed from multiple perspectives and angles. The best way to support

young women with their learning pathways is to do so in a variety of different ways and at many different points along the way.

1. Introduce Game Design to Girls' Possibility Space

The Problem Space. Among the women I interviewed, several of the participants emphasized the importance of introducing girls to games as a potential career path early on. This was particularly important for the women who frame themselves as educators. Eva called this phenomena making games a part of girls' "possibility space," emphasizing that doing so can have a significant impact on girls' beliefs about their abilities and how they approach tasks in school. Rather than taking traditional approaches to school projects, such as writing a report or making a poster, girls who have prior experience with game design are more likely to choose to make a game instead, she notes.

In the Twitter conversations, many women noted that they grew up hearing that girls just don't do things like play games or go into technology fields. Transforming educational spaces into places that combat those stereotypes rather than perpetuate them is critical. One positive experience early on has the potential to motivate ongoing advantages, empowering girls not just with the skills and knowledge of basic game design, but also paving the way for the girls to develop identities as technologically competent young women who can imagine themselves as professional game designers and leaders in technology fields (Denner, 2007; Denner, Bean, & Martinez, 2009).

In the interviews, Savannah and Josephine both expressed that the education pipeline let them down in some ways by not introducing games to their possibility space earlier on. "I've always played video games," Savannah describes, "but nobody ever mentioned that as a possible

career choice for me.” She explains, “Nobody ever asked me, ‘What are your interests? You like video games? Well why don’t we look at a career path that way?’ And I think that’s a big lost opportunity.” At several points in her interview, Savannah expressed exasperation with the fact that her teachers, counselors, and family members had a narrow vision for what they told her she could do, encouraging her to become a teacher because it was a traditionally acceptable path for young women. “Being a teacher is great,” she says. “We definitely need teachers. But why are we only encouraging little girls to be teachers?” Savannah eventually found her way, breaking into games as an English localization editor. And she is on her way to accomplishing her dream of becoming a narrative designer, but she sometimes feels like she lags behind, lacking skills that she may have pursued earlier on if games had been a part of her possibility space.

Now an indie game developer, Josephine did not grow up with technology in her home and she was never encouraged to learn any technology skills beyond word processing in school. It was not until college that games entered her possibility space. She explains:

I was just playing around with Flash,” she says, “and realized that I could re-create *Myst*. I don’t think I was thinking about it like, ‘Oh, I can make games.’ It was just I want to make this thing and see what I can do with it. And then it morphed into, ‘Oh, I can make games.’

Josephine says she got obsessed at that point and began to teach herself action script. She eventually made an educational game for her local elementary school as her undergraduate thesis project. Instead of helping her to find this passion for games and programming, Josephine’s experience with school seems to have played an active role in discouraging her. Explaining that she had been diagnosed with a learning disability early on, she explains, “The tech stuff was for

the gifted kids. I was shut out of a lot of that. It was obvious to me growing up in school that I can't do that because they have the gifted kids doing that.”

Thinking Forward. Data in the Twitter conversations paired with Savannah and Josephine's stories suggest that many young women could benefit from having games introduced to their possibility space earlier on. Both women in the interview sample eventually found a path to games and are doing relatively well in their current career trajectories, but many participants in the #1ReasonWhy conversation expressed that many women are deterred from games before they make it that far. Savannah and Josephine's trajectories would paint them as success stories in their current experience, but both women express feeling let down by their formal educational experiences. For Savannah, it was being pressured into traditionally feminine roles like teaching and not having anyone to encourage her to do something with her lifelong passion for video games. Josephine lacked exposure to technology early on because of the diagnosis of her learning disability. Their experiences demonstrate that kids are sometimes put into narrow possibility pipelines when we could be opening them up to a greater diversity of experiences. Savannah and Josephine may have benefited from learning that they can make games much earlier in their learning pathways. Their stories suggest that more widespread support for programs like Girls Make Games or the adoption of game jams in middle and high school curricula could help young women like Savannah and Josephine get an earlier start with games and technology.

2. Introduce Programming Early and Often

The Problem Space. Over and over in the #1ReasonWhy conversation women tweeted their frustrations about not being recognized as the *right kind* of person. At industry events their

gender marks them as more likely to be a booth babe or marketing representative than a game developer. In workplaces, women seeking programming positions report being directed to other kinds of positions. And in education, they share stories like this one: “Every advisor I spoke with tried to steer me away from CS, even suggesting I would flunk out.” Another Tweet argues, “women are discouraged from the tech industry as a whole.” With messages from myriad directions suggesting to women that they do not belong in games and technology jobs, educators and educational institutions have a hard road ahead if they want to increase the number of women graduating with computer science and other information technology degrees. Exploring my participants’ reports about their experiences with programming reveals a need for not just introducing girls and young women to programming, but doing it more than once and in different ways in their educational pathways.

At first glance, the interviews I conducted with women in games suggested that the participants who had early exposure to programming fared the best in terms of pursuing technology-heavy professional trajectories later on. Teagan describes that by the time they took programming classes in school, “I was coming from a place of already knowing how to program because I’d done it before.” Teagan’s father was supportive, teaching them algebra at age nine and giving them a book about how to make computer games shortly after. “He gave me a book and then I learned how to program,” they describe. “I was the kind of kid you could give a book to and would learn how to do something.” Similarly, Andrea believes that she had an easier time earning her computer science degree because she had been introduced to programming from an early age. She went to a private school that introduced programming as early as second grade. Based on these descriptions, it is tempting to conclude that the solution is easy—introduce kids to programming in elementary school and we’ll have a society of happy, skilled, productive

programmers in a decade or two. Upon further reflection, this suggestion starts to seem deceptively simple. I returned each of the participants' stories about their early experiences with programming and found that the landscape of early programming experiences in their stories is much more complex than I initially realized.

Programming is not a straightforward and singular skill. There are many different types of programming languages¹⁹, and there are many different ways to be introduced to them. For some students, the connection between programming and math makes it seem more appealing and approachable. The association deters others. As I dug deeper into my participants' stories, I began to see much more variety in their early experiences with programming and code. Even for those who had early exposure to programming, the experiences were not always positive. How the women in this research interpreted and responded to their early experiences with programming varied significantly depending on a variety of significant contextual details. In Table 1 below, I outline some of these early experiences and identify corresponding roadblocks that may have interfered with their willingness to pursue future programming endeavors.

¹⁹ Wikipedia lists 45 different types of programming languages. While many of these are likely to be somewhat obscure our out-of-date, this figure gives offers an idea of the scope of the different languages out there. Source: http://en.wikipedia.org/wiki/List_of_programming_languages_by_type

Participant Experience	Potential Roadblock
I never learned programming very well by just, ‘Okay, here are some concepts. You figure out how to apply them.’ For me, it’s like, ‘I want to do this thing. How do I do it?’	Too much abstraction and lack of emphasis on the learners’ goals can be an issue. A just-in-time approach to pedagogy may be more effective.
I had one teacher that was really good, and was trying to talk me into doing programming, but at that point I was just like, ‘That’s more math that I don’t want to do.’	Emphasis on math can be unappealing. This participant later learned to program because she wanted to make adventure games that emphasize narrative and story. She was capable of doing the math, but for her, too much emphasis it negatively affected her interest.
I had tried making the game in other game engines with varying levels of suitability. And I would scrap all of those abortive attempts because the engine didn’t feel right for me. Once I hit upon something that I liked, working in it was easy for me to actually make things and finish them.	Sometimes it is just the matter of persisting until the learner finds a compatible tool, language, etc. This participant eventually went on to major in computer science and has won multiple game design awards.
Your first third of the way through a learning curve you’re going to feel overwhelmed and nothing is going to work and it’s going to suck.	Perseverance is critical. Encouragement from outside sources like mentors and teachers may be essential for some students.
The teacher set up an elective course in Visual Basic. I was 15 at that point. Visual Basic is very, very, very basic. Back then especially it was very ugly. It was Windows 95. I just remember at the end of that being, ‘That’s interesting but I have no idea how to put graphics into this.’ It made me want to back right out of it.	Not all programming languages are a good fit for a learner. This can particularly be problematic if the learner cannot accomplish what they want to with the language or tool they are working with. This participant went on to major in 3D animation, but did not come back to programming for years.
To get your Comp Sci degree at my school you take three semesters of Calculus. It’s not light on the math. I had a math TA tell me flat out that women were no good at math. I had to come to his office hours to ask about something and he was like, ‘You didn’t do very well on the test because women are no good at math. You guys should just go somewhere else.’ I dropped that class section. Because I did not want to deal with that guy.	Bad experiences with a teacher or teaching assistant can be a huge hindrance. This woman persevered, taking the class the next semester with another TA and no issues, but others may not have the same confidence to go back and try again. For some learners, an experience like this could lead them off a pathway toward technology or games.

(Table continues below)

I was talking to someone in the class and we decided, ‘We should make a game together!’ And I was like, ‘We could do that? I guess we can.’ So we tried. I was making models in 3ds Max. Neither of us knew how to program. The teacher overheard us and he said ‘If you want to be making games, you need to learn how to program.’ And he hands us this giant tome. It’s this huge C++ book. And we both kind of stared at it. I remember opening it up and just being like, ‘Hello world? What the fuck? Like this isn’t a video game. I don’t care!’ So we just politely closed the book and put it away and kept making things in 3ds Max.	Teagan described being the kind of kid you could hand a book to and they would learn. Not everyone can learn this way. This particular woman was turned off to programming because there was too much disconnect between the large abstracted book and her concrete goal of making a game. She eventually majored in computer science and is currently a skilled programmer, but this early experience was not particularly productive for her.
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Table 1. Descriptions of participants’ early experiences with programming and explanations of the possible roadblocks for future learning that they pose.

As the contents of the table demonstrate, even students who go on to become proficient programmers encounter roadblocks along the way. It might be that the first few languages or tools are not the right fit. In some cases the pedagogy might be too abstracted from the student’s concrete vision for what she wants to be able to make. In other situations it could be a mismatch with a teacher, particularly if the teacher is overtly hostile and discouraging. There are many reasons why a student may have a negative experience with programming early on.

Thinking Forward. Early experiences with programming can be a really positive motivator for a student who encounters more complex programming tasks later on. Feeling familiar or comfortable with programming can be a powerful incentive for perseverance later on. However, in addition to introducing programming early, the stories in the interviews suggest that it might also be important to introduce programming often. Students have diverse learning styles. There are also many different programming languages, engines, and tools. While some are going

to be a good fit for any particular student, some will not be a good fit. By introducing programming languages and tools to students from an early age and then at several points throughout their educational trajectories, we can increase the chance that more students will encounter a language, tool, or pedagogical style that motivates or inspires them. With early programming experiences, context is critical, and the best solution might be introducing programming at several different times and in several different contexts. Students are diverse and their learning experiences should be too.

3. Make the Diversity of Possible Skills, Roles, and Pathways Visible

The Problem Space. In the previous section I outlined why should introduce girls to programming early on in their education, and at multiple points along their trajectories. Skills such as programming and computational thinking are increasingly important for a variety of fields and career paths, but the data from this research shows how girls and young women receive constant messages about how those are not spaces for them. Another issue I uncovered from accounts in the interviews I conducted with women in games suggests that too much emphasis on programming may actually deter some women from pursuing pathways in games. While I contend that programming is an important skill that we absolutely should be teaching in schools, it might also be important to help students understand that programming is not the one singular path to getting into a career in games or other technology fields. The perception that games are the only path to games, however, is a common one, and one that the data suggests is a deterrent for many young women.

Now an educational game designer, Cassie explains that in college she started to believe that games could be powerful teaching tools, but she did not think that she had the ability to

contribute. She had an interest in trying her hand at game development but thought, “I probably can’t do that because I have an English degree. And I don’t know anything about making games.” Among the 21 women that I interviewed for this research, English was the most popular college major, with four of the participants earning bachelors degrees in English. Several others majored in things like geography, philosophy, and printmaking—all majors that we would not think to connect to a future career in games. See Appendix H for more additional educational data on the participants, including undergraduate and graduate degrees, the types of institutions the participants attended, and what regions they earned their degrees in. The second most popular major was computer science, with three of the study participants earning bachelors degrees in computer science. While this is a relatively small percentage—under 15 percent—there is a widespread belief that computer science is one of the only legitimate pathways into a career in games. Many of the women I talked to reported that before they had their first job in games, they thought it would be impossible for someone with their skill set and experience to get in. Similarly, several of the women expressed feeling like they were behind because they did not earn college degrees that led to direct pathways to games.

This issue of students ruling themselves out for career paths that interest them because of their lack of programming knowledge is one that Erin was particularly articulate about. With the student centered non-profit organization she runs, Erin reported that many of the students stopped attending meetings because they did not think they had the right skill set for pursuing games. She explains:

There was a big discussion where a lot of students were saying, ‘Oh, I want to work in games, but I’m not a developer. I’m not computer science. What can I do? I don’t think I can do anything.’ And then they shut down. And they left.

Particularly for students who do not feel like they fit the profile for what they think a game developer looks like—including women and other under-represented minorities—there is a risk that students will rule themselves out for pathways relating to games before they really get started. Accounts from both Twitter and the interviews indicate that this is the case for many women.

Thinking Forward. Educators should take care to push back on the misconception that programming is the only pathway to games, or that it is the only skill that the industry values. Erin’s student-centered non-profit organization implemented a number of strategies that I believe other educators could learn from. They invited industry professionals to talk to the students about their careers and trajectories. She explains, “Often they were odd end jobs, showing students that there’s more than just programming.” Of course they invited programmers to speak too, but Erin and her staff emphasized that the game industry is diverse and varied, bringing in people with all kinds of experiences and skills.

Erin’s organization also started to emphasize diversity at the game jam events they hosted. She explains, “We wanted to put more voices in.” They emphasized that they needed more than just programmers to make a good game. It requires designers, artists, sound experts, and others. “We tried to find all of those people and tap into new communities to bring them all together,” she adds. Erin expresses how exciting it was when someone came to a game jam and discovered that they could make games from a perspective they had not previously imagined was possible.

Game jams are an ideal setting for showing off how many different skill sets go into the development of a game. They are also low risk environments for learners to try out a new skill. Many of the participants in my research began learning to program later on, after they had

already established careers in the industry. Knowing already that they could work in games and belong in games meant they spent less time questioning and discounting themselves like the students that Erin observed. When women already have careers in games and already know their value, learning to program simply makes them more valuable to their employers and to themselves. But when women are deterred from taking the first steps into those careers because they discount their value before entering the industry, we lose perspectives, ideas, and skills that could otherwise do a lot toward diversifying games and the industry.

4. Make Resources, Tools, and Community Available Outside of Computer Science Departments

The Problem Space. Women play games and use digital devices in equal numbers as men (Lenhart, 2015). They also receive more than half of the undergraduate degrees awarded in the United States. But women obtain less than 20 percent of the total degrees in computer and information science fields (National Center for Women & Information Technology, 2012). Yet computer and information science departments are where resources like software licenses and other game-making tools are typically most accessible to students. Computing departments in high schools and computer science programs at universities often have access to technologies, software, and tools that are not typically abundant across other areas of the school. Some schools, particularly those in neighborhoods or lower socioeconomic status, lack these resources entirely. For both formal education environments like university programs, and less formal learning contexts like after school club spaces or libraries, acquiring resources for student developers can be a challenge. And these resources are important.

To develop the types of portfolios and game prototypes that could get them into top design programs or secure a spot in competitive student game shows, students may need access to the latest game consoles and systems, as well as new devices that are not broadly available such as virtual reality headsets. Expensive software programs like Unity Pro, Game Make Studio, Photoshop, and motion capture software also present barriers to students. Added features in software, like conversation systems or tools to make multiplayer games, often cost additional money and may be sold as individual parts. The prominence of tablets for drawing makes art increasingly less accessible for students. Thinking about how to make resources broadly available to students with a variety of different interests is critical. By siloing these resources in computer science departments, often the least diverse of any department in a university, many students miss out on having access to these tools.

Thinking Forward. Providing students with resources is one of the top priorities of the campus-based non-profit group that Erin serves as executive director for. The organization is based on a large university campus. “Having these resources available and free for students is super important,” Erin notes. Originally planning to go to medical school, Erin describes, “I didn’t even think non-profit was a thing that I could do as a career.” She had originally started the organization as a student group for playing games, but as Erin started to recognize the extent of the needs on the campus, she decided to pursue building up the organization as a full-time endeavor. “There’s not even a place for them to check out things,” she had realized. “Let’s talk about a library system. Games are expensive.” As she continued to grow the organization, Erin says:

I wanted it to be something bigger. I had a pretty big vision for it to be some sort of support system; some sort of community; some sort of infrastructure to help students around here specifically get involved with games and get experience with games.

As Erin started to recruit sponsorships from local organizations and major game companies and corporations like Microsoft, they ramped up programming. “We started doing a lot more workshops and panels and really focusing a lot more on the development side instead of play.”

They also host a weekly event where their space is open from the early afternoon until late into the night where students can go to play and work on their games. They make computers and software available to be checked out. The organization recently hosted a Unity workshop for the campus community.

While some of these resources were always available to certain student groups, like those in the computer science department, Erin aimed for providing resources to anyone on campus and has been able to bring together students with a diversity of interests and a variety of majors. They play together and they develop together. Her campus has the advantage of having this dedicated organization working to provide students with resources and to connect the campus community. While not all universities, libraries, and after school spaces will be able to build a program of this scale, Erin’s organization serves as a model to aspire to. Identify the needs of the local community, start small, and build over time. Her group hopes to expand to other universities over the coming years, and I hope others will be inspired to lead similar initiatives in their local communities.

One of the strengths of this particular organization is that fostering diversity and community are a core part of their mission. In a recent conversation with Tracy Fullerton, Director of the University of Southern California Games Program and Chair of the Interactive

Media & Games Division of the USC School of Cinematic Arts, she described that game programs have a problem of sorting students into silos (personal communication, March 25, 2015). Designers only talk to designers. Programmers only work with programmers. Groups like Erin's organization are valuable because they strive to connect students from across the campus and then provide them with the resources they need to collaborate on game projects together. Institutions of higher education need to initiative efforts to connect more diverse groups of students and to provide them with tools that are currently only available to small subsets of their student bodies.

5. Incorporate Industry Culture Content into Game Design Program Curricula

The Problem Space. Findings from the Twitter studies and interviews suggest a widespread need for empowering women to manage and advance in their careers. Current educational programs emphasize hard game design skills like programming languages, level design, 3D modeling, etc. Of course these topics should be taught in these programs as companies want to hire experienced and skilled students. But fully neglecting to train people how to conduct themselves professionally and how to manage their careers comes at a great cost, particularly to women and other underrepresented minorities in the industry. Findings from my investigation of the #1ReasonWhy Tweets revealed that women are often evaluated on different standards in their professional lives, that they are often denied status as experts, and that they face harassment and efforts to silence them in industry workplaces. While not all workplaces have toxic cultures like this, this does not mean we should not address these facts in game design programs, showing students the harmful effects that even small incidents can have on people's

professional careers. If women are to face these kinds of workplace environments, it is important that game design programs equip students with how to best handle various likely scenarios.

Emphasizing professional development and career management in game design programs could potentially address a couple of different industry-wide needs. First, career training could help individual developers to understand their value and to invest in themselves. In her years working as an industry recruiter, Marie identified that students need to be able to look at their entire career rather than just getting a job. She says that game design programs currently teach students how to do a job, but she notes that teaching them how to be in the job is another issue. She encourages industry professionals to constantly invest in themselves through networking, training, and even small things like keeping an up-to-date resume and LinkedIn profile.

Marie argues that doing these things accomplishes two things—it makes people more valuable to their employers, but it also gives developers a better sense of their own value. Understanding your own value is empowering, Marie argues, and it helps people manage their careers better. She explains:

I want to empower people to feel like they have a better sense of self. They have a stronger sense of self so that they understand their path, they know where they're going, and they know how to get there.

In her interview, Marie shared that she left a job where she was being harassed having no sense of her own value and of what she had to contribute. She believes that if she had possessed a better sense of her value at the time, she would have had the career savvy to recover from that negative phase in her life much more quickly.

Bethany shared a similar story in her interview, where she worked personally with a female programmer who did not understand her own value. After investing in this woman,

paying her several months of salary for professional development time to brush up on her programming skills, she describes that the woman “blossomed,” and went on to do all of the programming for their next game title, which has done very well financially. Particularly for those who do not fit the mold of the stereotypical young, male, white game developer, explicit training on career management and understanding your personal value could go a long way.

In addition to teaching career management techniques, I believe there is a need for game design programs to incorporate more industry culture content into their curricula. Topics such as harassment, appropriate workplace behavior, and quality of life issues should all be incorporated into students’ coursework, perhaps as a specific course that addresses current topics in industry culture. In Erin’s interview, she talked about the issue of male students unknowingly making comments that made the women in the group uncomfortable. At the time, the game *League of Legends* was popular among many members of the group, and the men took to calling the women “League Honeys.” Erin explains, “The men may not even think it’s offensive. They think it’s funny. But it’s not. And it makes the space uncomfortable for women.” Addressing issues like this could easily be considered another form of professional development.

Quality of life issues, particularly around the industry practice of normalizing crunch cycles, could also have a place in curricula around professional development. Crunch time was one of the primary reasons why Annabelle left the game industry. At her last company, crunch cycles were particularly long, and she describes one period where her team was under a mandatory six-month crunch. “It’s seriously like a six month memory gap,” she explains. “And it’s hard to realize that because you become more accepting. You rationalize, ‘Oh, it wasn’t so bad.’ No, it was really bad. You’ve just blocked it out.” She shares that young developers straight out of school would sometimes be excited to start crunching because they perceived it as

an opportunity to earn their badge as real developers. She tried to tell them, “Don’t get excited about your company abusing you with bad management practices,” but she says her arguments often fell on deaf ears. Annabelle believes that the cycle becomes hard to break because the people who end up persisting in the industry and becoming leaders are those who “are best able to deal with the bullshit, so they just perpetuate it. The managers are like, ‘Oh, well we just have to do crunch because that’s what we do. It’s like an abusive cycle that’s never going to end.’”

Thinking Forward. To better address issues around career management, professional development, and quality of life, game design programs should aim to incorporate these topics into their curricula. Table 2 on the next page outlines several important curricular topics that come directly out of the Twitter and interview data from my research. The table also provides a direct example of the issue from Tweets and interview transcripts in the data corpus.

Content Topic To Be Incorporated to Curriculum	Example Of Need From Data
Workplace Culture & Behavior	
Denied Voice & Expertise	#1reasonwhy because if I am attending a meeting with a male co-worker attendants immediately assume he is in charge and talk to him first.
Double Standards	because forceful men in business are called leaders while forceful women are called bitches. #1reasonwhy
Exclusionary Practices	#1reasonwhy because some game companies hold business meetings at stripclubs.
Harassment	#1reasonwhy because every woman i know has a story about being verbally or physically harassed when we dared to attend an event on our own.
Inappropriate Behavior	#1reasonwhy because men always want to help me with my code which means leaning over my shoulder and looking down my shirt.
Inappropriate Conversation Topics	#1reasonwhy because nine times out of ten I don't speak out when I hear the guys discussing the fuckability of female co-workers.
Tokenizing Practices	because no dude ever got this email: we really want a guy on this panel and you're a guy.... just ask don't neg me first. #1reasonwhy
Leadership & Management Practices	
Hiring Practices	#1reasonwhy because in an interview I have been told to my face that I would not get a position because I had boobs.
Unequal Pay	because a former boss justified paying a female co-worker 20% less same job as me saying it's supply and demand really #1reasonwhy
Quality of Life	
Crunch Time	The managers are like, 'Oh, well we just have to do crunch because that's what we do. It's like an abusive cycle that's never going to end.'
Work-Life Balance	because I don't know if we can both manage 90+ hour weeks if/when we decide to have kids (and the onus is still on the woman) #1reasonwhy

Table 2. Important industry culture topics to be addressed specifically in the curricula of game design programs and examples from research data emphasizing the need.

Even just one semester-long course that incorporates career skills, as well as current topics and culture in the industry, could potentially go a long way to making young developers more aware of their value and more cognizant of some of the realities that are so damaging to many people in the industry. Educating students on these topics will not solve all of the industry's problems, but by making young developers more aware of these issues early on, we can hope that these early experiences will have a positive impact on students' leadership styles and strategies as they rise to more prominent roles in the industry.

6. Support Dedicated Incubator Programs, Venture Capital Funds, & Leadership Training for Women

The Problem Space. If the game industry genuinely wants to invest in recruiting and retaining more women, it is absolutely critical that young women have access to incubator programs, leadership training, and venture capital funds. I am skeptical that the game industry will see substantive change without putting women on tracks to become leaders and industry influencers. This is a sensitive issue. One of the core complaints of the GamerGate community is their belief that industry outsiders such as female developers, feminists, and allies, are given preferential treatment and overly sympathetic press coverage. Press is not power, however. Mia, CEO of a mobile game start-up that is struggling to raise venture capital funds, says it is a common misconception that people who get a lot of press get a lot of money. If anything, the opposite is true. "The only way you can get press is to talk about the fact that you're a woman," she explains. This issue came up frequently in the #1ReasonWhy data—many women reported feeling exasperated by the fact that in interviews they are only asked about being a woman, and at the expense of having the opportunity to talk about their games and their skills. This is an

issue that Bethany knows well. As a prominent advocate for women in games, Bethany spends so much time managing press and other public facing issues, she struggles to find time for building and leading her company.

Mia strongly believes that there need to be angel funds exclusively dedicated to funding women in games. “The solution can’t be solved with people,” she says. “It has to be solved with money. You can’t start your own business without money. It’s legitimately impossible.” Some would argue that funds exclusively for women are unnecessary and that women just need good training, but in Mia’s experience, even good training has not been enough. She was a part of an incubator program, “a female entrepreneurship and training program to teach women to be more confident. To teach them how to raise money.” The program offered free legal advice to female CEOs. Even with access to the program and positive feedback on what she is doing from nearly all directions, she still has not been able to close a deal to fund her company. Mia is not in the minority. Only 2.7 percent of venture capital funded companies have female CEOs. And men start their businesses with almost twice as much capital as women, an average of \$135,000 compared to the \$75,000 average for women-led companies (Women Who Tech, 2015). Mia closed these types of deals when she was working for a company with a male CEO, but she has so far struggled to raise funds for her own company.

From Mia’s perspective, supportive words are nice and good, but money helps motivate change. Mia works with an organization that runs a scholarship program for sending students to major game conferences. This year the organization worked with a major technology company to get funds specifically for sending women to the annual Game Developers Conference. “We wouldn’t have been able to send as many students as we did without the funding,” she says.

Dedicated resources to raising women to leadership positions are critical for change. And change is what the women in my interviews are striving for.

Bethany's company, also trying to raise venture capital funds, has a fundamentally different approach to game content and hiring compared to the current norms in the industry. "I see this ocean of game development over here, and it's made by men for men. Violence is the primary mechanic," she explains. She notes that she is more interested in games that allow players to emotionally connect with their character. Her company's acquisition strategy is "to find moms and give them jobs." She elaborates:

We desperately need someone in the industry that looks at all of these people out here and says, 'This is how you give a supportive workforce to these people who are being shown the door constantly. This is absolutely a must have for the industry.'

Talking to Mia and Bethany, it is clear that women need funding to build their businesses because the inclusivity, diversity, and creativity that they are striving for—both with the content they design into their games and the leadership strategies they aim to run their companies on—can be true catalysts for change. Bethany describes her experience trying to work with powerful men in the industry about addressing change. "What I find so frustrating is that it's always about them," she shares. "You spend so much of the conversation stroking their ego about they are a good person, you're not a sexist. And they're more interested in feeling like they're not sexist than they are about addressing the problem."

Thinking Forward. One possible solution for helping women rise to leadership roles is to create a pipeline of dedicated resources specifically to support women on leadership pathways. We need scholarship programs to send women to the events and conferences that they need to build their networks. Incubator programs such as the one that Mia participated in seem critical in

helping women develop leadership skills, get legal advice, and gain access to critical networks. And finally, dedicated funds to supporting women-led companies seem to be one last critical component. Without the actual funds and resources to build their businesses, women like Mia and Bethany will not be able to make the changes they want to see in games. The success of these women's companies—with innovative game content and progressive company cultures—will be critical as models and motivators for future change. Educators may not be able to directly provide these funds and resources, but they can actively seek out opportunities and programs, encouraging the women they teach and mentor to always apply. Those who direct programs should prioritize partnerships with organizations, companies, and entrepreneurs who can provide resources to create more opportunities for women to develop and build their own companies.

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Final Thoughts & Future Work

In her chapter on women game developers and workplace challenges in the *Beyond Barbie and Mortal Kombat* book, scholar Mia Consalvo (2008) describes women's experiences in the game industry, focusing specifically on why they stay and why they leave. Using statistics from the International Game Developers Association's 2004 Quality of Life survey and data from ten interviews conducted with women who work in the game industry, Consalvo concluded that the industry relies on crunch time and the ideology of passion to perpetuate industry work practices that result in "rapid turnover, retention problems, and a work culture that valorizes youth, passion, and long hours over maturity and experience" (p. 188). She suggests encouraging more girls and women to take on leadership roles in the industry so that they can encourage healthier work practices across the industry as a way to transform the damaging ideologies and practices that are so pervasive in the current industry culture.

The research I report on for my dissertation builds on Consalvo's work. The Twitter studies that I conducted address a nearly identical research question—why women leave or persist in the game industry—but this research utilizes a data set of thousands of Tweets specifically addressing those very questions. I also conducted 21 interviews for this research—more than twice as many as Consalvo's earlier study, addressing broader questions about women's trajectories and experiences in games. I talked with my participants about their thoughts on leaving or staying in the industry, but I also talked with them about their educational pathways, professional trajectories, their values, and their predictions for how the industry will change over the coming years. My findings reveal that crunch time and insidious ideologies about having passion for the industry are problems that women in games are still facing. But these issues are a few among many others.

Examining women's experiences in games, both through analysis of recent Twitter conversations and conducting interviews with women in various roles across the industry, revealed a constantly shifting landscape where women contribute a diversity of skills and experiences. Through investigating the #1ReasonWhy conversation, I discovered that women are evaluated on a different set of standards than their male counterparts, and by criteria other than their professional contributions and accomplishments. Women are denied the recognition of status and expertise that their male colleagues enjoy. Finally, I read accounts of how women's voices are silenced, dismissed, and made invisible, and observed their explanations for why they do not feel they belong. The #1ReasonToBe conversation served as a counterpart, showing that for some women, their love of games outweighs any of the negative experiences they put up with. Those who contributed to #1ReasonToBe showed that many women find the industry to be full of great people and stellar support networks. Lastly, many women feel motivated by the idea that they can change the culture and build the future for games.

The interviews I conducted with women across the game industry confirmed much of what I learned by examining the Twitter conversations. Women shared their greatest challenges and frustrations, as well as their reasons to be in games. Because of the timing of the interviews, I learned how the GamerGate controversy affected the lives and careers of these women, discovering that a great many women in the game industry feel pressured to be silent in order to protect themselves and their families. I discovered that each of the twenty-one women I talked to plays a personal part in making the industry a better place for the next generation of women. They take part in education initiatives and many serve as role models. A number of the women in the study have pursued advocacy work, and several are working as leaders to build organizations and companies. Some of these roles are incredibly public facing, while others take on roles that

are less visible, but no less personally meaningful and with no less impact on the groups they work to empower.

Using lessons learned from the Twitter and interview data, I organized implications for researchers, educators, and other industry stakeholders. I discussed the importance of making games a part of girls' possibility space and introducing computer programming early and often. I outlined why it matters that we emphasize the diversity of roles and skills in the game industry, and made a case for why resources and networks of fellow developers should be made accessible to students outside of computer science and game design programs. I emphasized the need for young people in the industry to have more experiences with professional development and career management. Finally, I outlined the need for women in the industry to have access to incubator programs, leadership training, and venture capital funds specifically for women-run companies.

It is my intent that these recommendations will serve as the foundation for future research. For example, I would love to conduct a longitudinal study exploring the pathways of girls who have games introduced to their possibility spaces at an early age. How does planting the seeds of an identity as a game designer early on influence girls' learning pathways over the next five years? What difference does having strong role models make? Seeing the variety of ways that women describe industry workplaces in the Twitter conversations suggests a need for in-depth ethnographic research on the cultures and climates of game industry workplaces. Hiring processes in particular seem to warrant further investigation. Finally, I barely skimmed the surface of understanding how female CEOs experience the process of pursuing venture capital funds for their young game companies. Case studies on their experiences could reveal a lot about how the industry can better support female leaders. These are a few examples of many ways that I may continue to pursue this work in the next phase of my academic career. I believe there is

also a need for more research that addresses diversity and equity in games from perspectives other than gender, offering many other potential avenues for future work. This research provided a strong foundation for many possible paths moving forward, and I look forward to forging the way forward with what comes next.

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Appendix A

Most Shared #1ReasonWhy Tweets

The table on the next page outlines the most shared and linked-to Tweets from the #1ReasonWhy data corpus. Among these Tweets, 12 of the 17 codes assigned come from the coding category for relating to culture trends around games and gender. This finding is more or less expected because the culture Tweets are the least context specific of the seven coding categories I utilized for this research study. The lack of context specificity allows for a greater likelihood that these Tweets will resonate with a larger number of Twitter users. A few Tweets relating to game content and game industry workplaces also made it into the most shared Tweets list.

Most Shared Tweets	Codes
Because if I succeed I'm exceptional. And if I fail I'm proof that women shouldn't be in the industry. #1reasonwhy	Culture 3: Women Defined by Gender/Tokenized Culture 1: Rhetoric That Women Don't Belong in Games
We've begun to raise daughters more like sons... but few have the courage to raise our sons more like our daughters. -GSteinem #1reasonwhy	Culture 4: Double Standards Culture 2: Concerns About Messages to Girls
Because we can't even complain about sexism in the gaming industry without men complaining that we're complaining. #1reasonwhy	Culture 1: Rhetoric That Women Don't Belong in Games Culture 14: Women's Voices Silenced & Dismissed
Someone explain to me why 50% of world population is a niche market while 18-25 year old males (~5% population) are core ? #1reasonwhy	Content 7: Women Rejected as Potential Market
#1reasonwhy because there's not enough investment in AAA games about something other than war cowboys football cars. sorry but it's true	Content 2: Games Conform to Male Fantasies & Gaze
Holy shit you guys. The game industry gender wage gap via @cuppy: http://t.co/mRPUDnyi6I #1reasonwhy	Workplace 6: Unequal Pay & Sexist Hiring Practices
Because I'm still referred to as a girl gamer or developer instead of a woman. At age 40. #1Reasonwhy	Culture 3: Defined by Gender/Tokenized
#1reasonwhy because if men express anger they're strong/powerful. If I express anger I'm overreacting/causing drama .	Culture 4: Double Standards Culture 14: Women's Voices Silenced & Dismissed Players 3: Women Seen as Attention Seeking & Over Sensitive
Because I am confronted with rape or violence in the comments section of Hey Ash videos #1ReasonWhy	Culture 10: Online Community & Comments Culture 11: Rape Threats & Jokes
Because every disclosure of harassment feels like risking never being hired again. #1reasonwhy	Culture 14: Women's Voices Silenced & Dismissed Workplace 5: Speaking Up Has Negative Repercussions

Table B1. The ten most shared #1ReasonWhy tweets and the codes assigned to them.

Appendix B

#1ReasonWhy Coding Scheme & Process

Adopting Saldaña's (2013) stance of "pragmatic eclecticism" (p. 60), I approached the #1ReasonWhy data with an open and flexible mind, in the initial data collection and coding phases. Using Descriptive Coding to assign basic labels to the data and to generate an inventory of topics (Saldaña 2013), I formed "bread and butter" categories (Turner, 1994, p. 199) to reveal the various contexts that the Tweets centered around. Major contexts included game content, education settings, industry events, workplace experiences, the treatment of female players, commentary on game cultures, and discussion about the discourse around women in games. These categories emerged as the major coding categories, and from these I generated a variety of subcodes for each. I utilized the qualitative data analysis software MAXQDA for the iterative process of coding and memo writing. The following table includes codes, code definitions, and example tweets for the #1ReasonWhy research study.

Code	Definition	Example Tweet
Codes on Culture & Systemic Sexism		
Culture 1: Rhetoric That Women Don't Belong in Games	Tweets expressing the ways women are made to feel that they do not belong in the game industry or as game players	because we're told through word and deed over and over again that we don't belong there. #1reasonwhy
Culture 2: Concerns About Messages to Girls	Tweets expressing concern over how girls and young women are discouraged from games and technology	#1reasonwhy because parents give dolls to girls and cars to boys.
Culture 3: Defined by Gender/Tokenized	Tweets expressing frustration about the ways in which women are defined by their gender as players & developers	because you can't just be a game developer. no you will always be a female game developer. #1reasonwhy

Culture 4: Double Standards	Tweets expressing exasperation at the double standards for behavior for women and the different criteria they are evaluated on	#1reasonwhy because my male colleagues are allowed to occasionally be obnoxious silly immature annoying drunk. i'm not.
Culture 5: Evaluated on Appearance or Relationships With Men	Tweets expressing frustration that women are evaluated on how they look or by their relationships with men in the industry	men still don't think i know anything about games because i'm a nicely dressed women with an afro #1reasonwhy
Culture 6: Stereotypes About Women	Tweets about the ways in which women are evaluated on the basis of stereotypes about women and femininity	because i've been told i am overly emotional when i have a strong opinion -- in a room of men screaming at each other. #1reasonwhy
Culture 7: (Sexual) Harassment/Stalking	Tweets about the various contexts in which women in games experience incidents of harassment or stalking behaviors	because prominent women in gaming are threatened with rape and/or violence on huge public fora for having the temerity to exist. #1reasonwhy
Culture 8: Larger Issues in Tech & Pop Cultures	Tweets arguing that the issues prominent in the #1ReasonWhy conversation are not unique to just the game industry	because white male privilege is alive and well and still dictating social norms for many industries #1reasonwhy #notok #silenceisacceptance
Culture 9: Need for Discourse About Diversity, Respect, & Equality	Tweets about the need for an industry-wide discourse about diversity, respect, and equality	#1reasonwhy because a very vocal loud and obnoxious minority believe that diversity will spoil their fun
Culture 10: Online Community & Comments	Tweets about how vitriolic the comments are on forums and press articles and the effect those comments have on women in the industry	none of my women developer friends will read comments on interviews they do because the comments are so brutally nasty. #1reasonwhy
Culture 11: Rape Threats & Jokes	Tweets about how rape jokes and rape threats are a normative practice in online gaming communities, in industry workplaces, and at games events	because major industry influencers who get called on rape jokes up the ante on survivors & make a t-shirt mocking them. #1reasonwhy #pax
Culture 12: Systemic Anti-Feminist, Male Fantasy Culture	Tweets about the predominant culture in games being anti-feminist, immature, and catering to male fantasies	#1reasonwhy because 'feminist' is a dirty word in the game industry

Culture 13: Women Competitive with Each Other	Tweets about women choosing to be in competition with one another rather than supporting each other	women feeling like they have to step on other women because there isn't space for the both of us #1reasonwhy
Culture 14: Women's Voices Silenced & Dismissed	Broad code capturing the many different ways in which women express feeling dismissed and silenced	because when the camera isn't on them many 'leaders' in the industry say they think it's a fuss over nothing#1reasonwhy
Discourse		
Discourse 1: Dismissal of the Conversation	Tweets either dismissing the #1ReasonWhy conversation as insignificant or Tweets from allies sharing stories of dismissal from other sources	#1reasonwhy is because apparently women have to have everything catered to them. quit whining about hurt feelings and actually do something
Discourse 2: Efforts to Co-Opt the Conversation	Attempts to use the hashtag for purposes other than the conversation, including getting attention from women and advertising purposes	the #1reasonwhy i'm using this topic tag right now is because i hear women are currently paying attention to it. and i deserve that for once
Discourse 3: The Conversation is a Reason	Tweets expressing that one reason why is because there is a need for the hashtag and conversation in the first place	#1reasonwhy because we have this hash tag in the first place
Discourse 4: Trolling & Antagonizing the Conversation	Antagonizing or trolling Tweets meant to dismiss or harass participants in the ReasonWhy conversation; or Tweets about such behaviors	because i really love you ladies and i only want what's best for you. now get over here. it ain't gonna suck itself. #1reasonwhy
Education		
Education 1: Women Are a Minority	Tweets expressing that there aren't enough women enrolled in game design and CS courses	because the ratio of men to women in the game design classes i teach is about 30 to 1 - it starts early. #1reasonwhy
Education 2: Hostility & Dismissal from Teachers	Tweets expressing that teachers are sometimes a source of skepticism and hostility	#1reasonwhy because first time i applied to a game development school a teacher asked me if i was a manhater out to cause trouble
Education 3: Hostility & Dismissal from Classmates	Tweets expressing that classmates are sometimes a source of skepticism, hostility, and harassment	#1reasonwhy because male college students groped me in my game design courses at school and made me terrified to attend class

Education 4: Classroom Culture Hostile to Women	Tweets expressing that the culture of game design programs and classes is uncomfortable or alienating	#1reasonwhy bc the jargon at my game dev school isn't that far removed from a internet forum.
Game Content		
Content 1: Diverse Characters & Content	Tweets expressing discouragement about the lack of diversity in games or a desire to see new types of characters and content	no mainstream videogame features a character of my build and gender expression because women must fit a narrow beauty ideal. #1reasonwhy
Content 2: Games Conform to Male Fantasies & Gaze	Tweets expressing that too often female characters must conform to narrow and overly-sexualized beauty ideals	because it's still considered okay to have all game women wear metal bikinis instead of armor. #1reasonwhy
Content 3: Ghettoization of Female Tastes & Characters	Tweets expressing frustration about how content created to target women is considered inferior or that making content for women can be damaging to one's career	because you have to worry when you make even one game for women or kids that you have now lost any credibility in real games. #1reasonwhy
Content 4: Paucity of Female Characters/Default is Male	Tweets expressing frustration that the default player and characters are male and that developers make excuses for the lack of female characters	#1reasonwhy because i've been told a female main character? i just don't see it. how could players relate to her?
Content 5: Sexist Marketing Norms	Tweets expressing that games are infrequently marketed to women and often rely on stereotypes and sex when women are featured in marketing materials	#1reasonwhy: because when a female designer questions the scantily-clad female characters in a game they're told sex sells. deal with it .
Content 6: Violence Toward Female Characters	Tweets describing that rape is a norm in backstories for female characters only and that "rapeable" is an acceptable art direction	#1reasonwhy because rape is never used as a back story for male characters
Content 7: Women Rejected as Potential Market	Tweets describing exasperation with the fact that women are not considered a viable or desirable market for games	because i'm constantly told by fellow devs that mostly guys buy games so there's no reason to appeal to women. #1reasonwhy

Industry Events & Spaces		
Industry 1: Assumed to be a...	Tweets expressing frustration with the fact that women are mistaken for disinterested girlfriends, booth babes, and PR reps at conferences	i'm entirely ignored or condescended to at e3 on the assumption that i'm there only because i'm probably with some man. #1reasonwhy
Industry 2: Dilemmas With Dress & Appearance	Tweets about the difficulty task of determining how to dress for industry events and the unexpected ways women are evaluated on appearance	because i have to spend twice as much time carefully selecting what to wear to industry events than i do for dates. #1reasonwhy
Industry 3: Don't Feel Safe	Tweets expressing that industry events are not always safe spaces for women who choose to attend	because conventions where designers are celebrated are unsafe places for me. really. i've been groped. #1reasonwhy
Industry 4: Lack of Women in Judging Panels & Keynotes	Tweets about how rarely women are featured as prominent speakers at industry events	#1reasonwhy because major game conferences believe there are no women influential enough to be considered for a keynote
Industry 5: Men Treated as More Expert	Tweets expressing exasperation that men are frequently assumed by default to be more expert in business settings	#1reasonwhy because if i am attending a meeting with a male co-worker attendants immediately assume he is in charge and talk to him first.
Industry 6: Uninvited Advances	Tweets sharing stories of uninvited and unwelcomed advances from men at industry events	#1reasonwhy because there's only so many times you can get hit on propositioned or inappropriately touched before it wears you down.
Industry 7: Women Hired as Entertainment	Tweets about women being hired as entertainment at industry events and meetings being held at strip clubs	because too many industry events feature half-naked women as eye candy for networking . #1reasonwhy
Treatment of Female Players		
Players 1: Fake Geek Girl	Female players are accused of being fake geek girls or are asked to prove their skills or interest as gamers	because i've been challenged on game knowledge more times than k can count yet i've been playing longer than most men #1reasonwhy
Players 2: Aggression From Male Players	Reports of teasing and hostility directed toward female players	because i'm really really sick of hearing the make me a sandwich joke #1reasonwhy

Players 3: Attention Seeking & Over Sensitive	Female players report being accused of being over sensitive or attention seeking for playing games; reporting that other women have ulterior motives	#1reasonwhy being told that i use 'gaming' as a playing card to attract males. can't a girl love halo and lotro because they're brilliant?
Players 4: Safer to Hide Gender	Female players report deliberately masking their gender and outline the negative consequences of not doing so	because i shouldn't have to change worlds and block people on runescape for harassment once they find out i'm a girl. #1reasonwhy
Workplace		
Workplace 1: Abilities & Accomplishments Undermined/Commitment Questioned	Tweets describing how women's abilities and accomplishments are undermined and how their commitment to games is frequently questioned	my own #1reasonwhy - i busted my ass to get a promotion. first response to it happening was that i only got it because i 'have nice tits'
Workplace 2: Leadership	Tweets describing the lack of female leadership and lack of support from male leadership	because our lead designer used to yell about there being a vagina in the room and nobody called him on it boss included. #1reasonwhy
Workplace 3: Life Balance & Family Challenges	Tweets describing the industry's negative attitudes about work-life balance and motherhood	because motherhood is viewed by most companies as a major liability instead of an incredible asset view and leadership skill #1reasonwhy
Workplace 4: Sexist & Exclusionary Office Norms	Tweets describing exclusionary office norms and sexist behaviors targeted toward women in industry workplaces	because whenever my friend asked colleagues to stop making rape jokes they asked her if she was on her period. #1reasonwhy
Workplace 5: Speaking Up Has Negative Repercussions	Tweets describing the consequences and fears of consequences for speaking up about gender issues in the industry	because i worry after 10 years and 50+ products that being a part of this conversation will hurt my future opportunities. #1reasonwhy
Workplace 6: Unequal Pay & Sexist Hiring Practices	Tweets about unequal pay, sexist hiring practices, and stories women hear about why they were or weren't hired	being told in job interview that female devs are hard to find because girls generally aren't smart enough. http://t.co/70jc9cvj #1reasonwhy

Table A1. Codes, code definitions, and example Tweets for #1ReasonWhy research study.

Appendix C

In this appendix, I offer a more in-depth look at how I re-organized some of the Twitter data into alternate formats, such combining several Tweets into a monologue conversation or focus group discussion. In the example outlined below, I show the individual Tweets that I combined to form a monologue paragraph about misogynistic practices in online game communities.

Sweet fiery Jesus popsicles, have you looked on any gaming forum ever? Argh! Argh!

The comments in every single gaming site's article about this hashtag make any decent human's eyes burn. That right fucking there is #IReasonWhy—because there are people who can suggest throwing acid in a woman's face and get away with it. Suggesting that people are marginalized and abused gets you marginalized and abused. Anonymity provides a safe screen behind which pre-existing sexism can be played out without challenge.

Original Tweet	Text Used in Paragraph
#Ireasonwhy because sweet fiery jesus popsicles have you looked on any gaming forum ever ever ever?	<i>Sweet fiery Jesus popsicles, have you looked on any gaming forum ever?</i>
#Ireasonwhy because argh argh argh the comments in every single gaming site's article about this hashtag make any decent human's eyes burn.	<i>Argh! Argh! The comments in every single gaming site's article about this hashtag make any decent human's eyes burn.</i>
that right fucking there is #Ireasonwhy -- because there are people who can suggest throwing acid in a woman's face and get away with it	<i>That right fucking there is #IReasonWhy—because there are people who can suggest throwing acid in a woman's face and get away with it.</i>
because suggesting that people are marginalized and abused gets you marginalized and abused. #Ireasonwhy	<i>Suggesting that people are marginalized and abused gets you marginalized and abused.</i>
#Ireasonwhy because anonymity provides a safe screen behind which preexisting sexism can be played out without challenge.	<i>Anonymity provides a safe screen behind which pre-existing sexism can be played out without challenge.</i>

Table A1. Table depicting Tweet data for monologue paragraph about online harassment.

In a second example, I show a second example of a monologue paragraph, this time drawing from Tweets that point out double standards for how women's behavior is interpreted compared to their male colleagues. This paragraph is slightly less literal than the previous paragraph, which quotes specific Tweets almost word-for-word. With this example, I was slightly more liberal in my interpretation, giving the paragraph a wrapping theme about belonging. I chose belonging as the paragraph theme because the Tweets pointing out double standards suggest that women frequently struggle to fit in. While a few parts of the paragraph are not direct quotations, the actual adjectives and descriptions for how women's behavior is interpreted come straight from the Tweet data. I chose to repeat the word "bitch" many times throughout the paragraph because the Twitter data includes more than 30 references to women being perceived as or called a bitch throughout the #1ReasonWhy data corpus. The precedence of the word implies that many women experience being called a bitch for behavior that they perceive as normative or acceptable for men in their workplaces and gaming communities.

In my male colleagues, I see men confident that they fit into their man's world. In myself, I see an outlier trying to fit into a world that isn't mine. Belonging. Belonging is hard. Where he is brave, I am confrontational. When he is considered honest, I am judged as aggressive. Where he is deemed strong and powerful, I am accused of overreacting and causing drama. He gets to be just a man. I am considered a bitch. He is ambitious. I am a bitch. He is a leader. I am a bitch. He is decisive. I am—again—a bitch. And finally, when his peers judge him as self-assured and confident, I am, (sigh), again perceived as a loud-mouthed bitch. The moment I'm anything less than patient, generous, and kind, I'm an angry and unreasonable bitch. Belonging is hard for a bitch like me.

Original Tweet	Text Used in Paragraph
#1reasonwhy because i'm a girl in a man's world! dudes are like oh mai stop soddering that sega saturn it's so old and priceless. no!	Idea of a <i>man's world</i> to get the paragraph started.
because we're told through word and deed over and over again that we don't belong there. #1reasonwhy	Idea of not <i>belonging</i> that serves as the theme for the paragraph.
#1reasonwhy because standing up for myself at work makes me confrontational but it makes a guy brave	<i>Where he is brave, I am confrontational.</i>
because when i speak my mind am blunt and honest i'm aggressive/bitchy. men who do it are keeping it real admired #1reasonwhy	<i>When he is considered honest, I am judged as aggressive.</i>
#1reasonwhy because if men express anger they're strong/powerful. if i express anger i'm overreacting/causing drama .	<i>Where he is deemed strong and powerful, I am accused of overreacting and causing drama.</i>
because when a woman speaks her mind she's labeled a bitch but when a man does he's labeled..... a man.. #1reasonwhy	<i>He gets to be just a man. I am considered a bitch.</i>
#1reasonwhy because when a man is aggressive he's decisive and ambitious but when a woman does it she's a bitch?	<i>He is ambitious. I am a bitch. and He is decisive. I am—again—a bitch.</i>
because i was actually told that i come across as 'bitchy' when trying to lead teams and manage processes. #1reasonwhy because forceful men in business are called leaders while forceful women are called bitches. #1reasonwhy	<i>He is a leader. I am a bitch.</i>
because when i'm fighting for an idea i'm not self-assured or confident. i'm a loud-mouthed bitch. #1reasonwhy	<i>And finally, when his peers judge him as self-assured and confident, I am, (sigh), again perceived as a loud-mouthed bitch.</i>
because the moment i'm anything less than patient generous and kind i'm an angry and unreasonable bitch. #1reasonwhy	<i>The moment I'm anything less than patient, generous, and kind, I'm an angry and unreasonable bitch.</i>

Table A2. Table depicting Tweet data for monologue paragraph about double standards.

Appendix D

#1ReasonToBe Codes

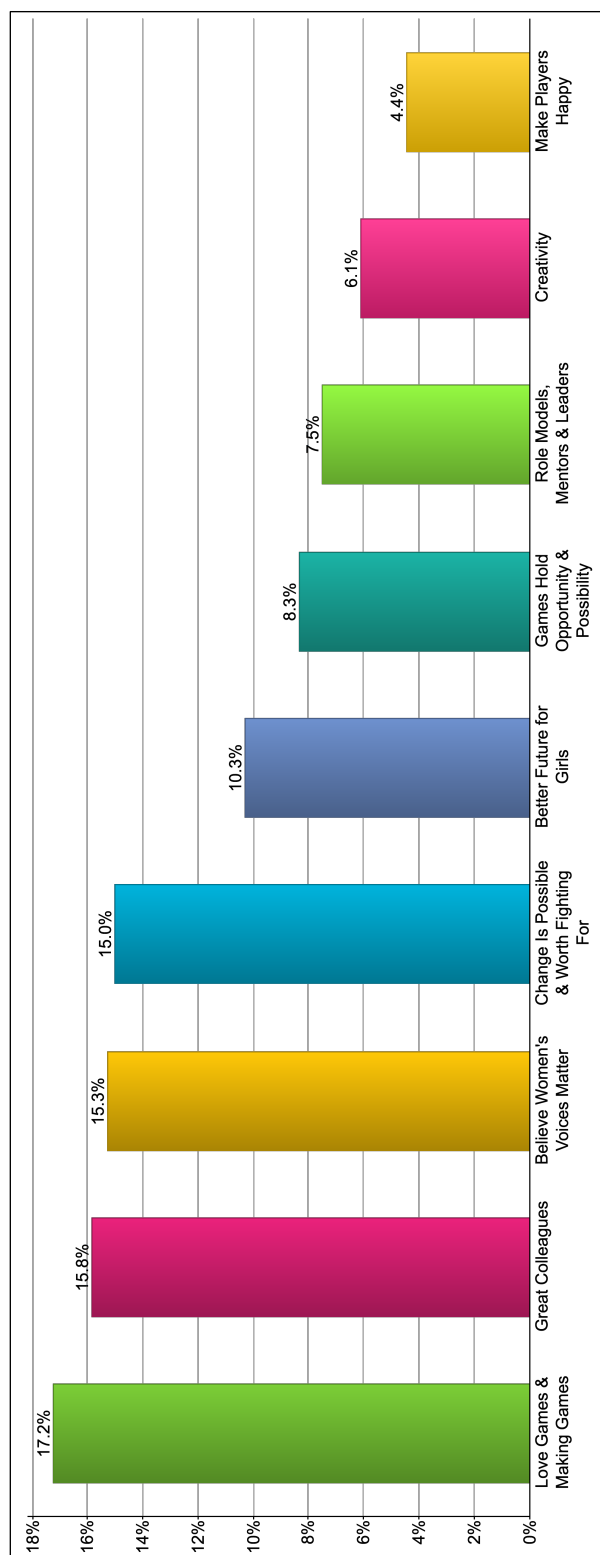
I utilized the same coding and analysis strategy for the #1ReasonToBe conversation, beginning with Descriptive Coding to generate an inventory of topics and themes. Because the #1ReasonToBe conversation had significantly fewer unique Tweets compared to the #1ReasonWhy discussion, the data did not require sub-codes. Rather, each of the major categories and themes that emerged from the data received just one code, amounting to a total of nine codes. From there, I combined the major categories to write about three major themes in the reasons to be—that women stay in games because they love games and making them, they have great relationships with their colleagues and fans, and finally, because they aim to make a difference for the next generation of girls and women in games. I utilized the qualitative data analysis software MAXQDA for the iterative process of coding and memo writing. The following table includes codes, code definitions, and example tweets for the #1ReasonToBe research study.

Code	Definition	Example
Belief That Women's Voices Matter	Tweets on the importance of discourse & emphasis on the fact that women's contributions matter	because we are ushering in a heightened awareness of equality that will actively permeate company cultures and game culture. #1reasontobe
Better Future For Girls	Tweets about the need for strong role models for girls and a desire for a future industry where girls feel like they belong	#1reasonwhy because i want to show my hypothetical daughter wonderful games where girls can be the hero and not the damsel in distress.
Change is Possible & Worth Fighting For	Tweets expressing that we need to be a part of the change we want to see and encouraging others to keep at it	working so hard...because i want to make an impact and change how women in the game industry are/can be treated #1reasonwhy

Creativity	Tweets expressing gratitude for being able to work on a creative medium	#1reasontobe a game designer is because it's a gift to be able to create a world in your head and have a talented team realize it.
Games Hold Opportunity & Possibility	Tweets expressing that games are a special medium, full of potential	#1reasontobe because despite everything no field has ever seemed quite as fascinating and full of potential.
Great Colleagues	Tweets from women who feel respected and accepted, expressing gratitude for having positive relationships with their colleagues	because i adore working with the talented intelligent funny quirky outrageously awesome people of this industry. #1reasontobe
Love Games & Making Games	Tweets expressing passion for the game making process	because every day i marvel at how i managed to get paid for doing something i love and working in a medium that is my passion. #1reasontobe
Make Players Happy	Tweets about the joy of sharing your work and have it be appreciated	#1reasontobe because i get to craft experiences that help add joy to the lives of millions.
Role Models, Mentors, & Leaders	Tweets thanking previous role models/leaders and expressing the desire to be one to others	#1reasontobe because my very top favorite games have had women in leading/production roles. @amy_hennig @rhipratchett

Appendix E

Code Frequencies for #1ReasonToBe Tweets



Appendix F

Interview Protocol – Guiding Questions

The following table lists the questions that I used to guide and move the interviews forward. These questions were not asked to all participants—they were simply used to move interviews forward if there was a pause in the conversation or if they previous topic seemed to be exhausted. When appropriate, follow-up questions were personalized, based on previous statements that the participant had shared in the conversation. For each interview, I aimed for a balance between talking about the participant’s pathway to games, her experiences as a professional in the industry, and her thoughts about the future for women in games.

How did you come to be in games? How would you describe your path or trajectory? [Life History]
When did you first come to be interested in a career in games? What experiences influenced you?
When did you first consciously think of yourself as a game designer? What was that experience like for you?
What do you think came first for you—the skills that you utilize when you’re designing games, or the desire and drive to be a game designer? Would you describe those two things as interacting at all?
What routines or practices have you developed that have helped you to get where you are now? How did you develop those routines and practices? Who or what helped?
How did you seek out opportunities to learn about game design? Did you have any especially influential resources or people that helped you? What/who were your best resources?
Who was your most influential mentor or teacher? How do you think s/he made a difference in your life?
What is your experience in games? [Contemporary Experience]
What is a typical day like for you at work?
How do you feel about your job? What are your favorite and least favorite parts?
Would you describe what you're doing in games right now as more of a job or a career?
Tell me about the game you're working on right now, or about your latest project.
How do you feel about the role you have in your current game design project?
Are you familiar with the #1ReasonWhy hashtag on Twitter? Did you participate or keep track

of the conversation at all?
What were you thinking when you posted this tweet? [For participants who took part in the Twitter conversations]
Do you follow press articles or blogs about women in game design or about GamerGate? What do you read or not read and why?
What are your thoughts on GamerGate? Do you see the core issues of the controversy as being relevant to you and your experience?
What does it mean to you to be a woman in game design? [Reflection on Meaning]
Do you think that GamerGate will ultimately make things better or worse for women in the industry? What effects do you anticipate that it will have?
What do you think it will be like for women in game design in the future? What is your role in that future?
Is 'game designer' a major part of your identity?
Do you think of yourself as a gamer?
Describe a time when you felt confident in your role in games.
Describe a time when you didn't feel confident about your skills. Did you doubt whether you belong in the industry?
Is it easier for men to get into careers in games? Why or why not?
Has it been a struggle to feel like a legitimate part of the game industry?
Have you been a mentor to another women in games? What has that experience been like for you?

Table C1. Interview protocol.

Appendix G

Interview Codes

Code	Definition	Example
Pathway Codes		
Formative Experiences	Descriptions of events or happenings that participants describe as being formative or direction-changing for their careers and professional lives	And I heard about GDC and I decided, I'm going to shell out for the whole week pass, which is expensive. I'm going to go and I'm going to soak in all that I can and worst situation is I go, I learn a lot about genre, and decide that this isn't the field that I want to go into, video games... So I went and it was amazing. I want to say by the end of the first day I knew that this was the industry I wanted to be in.
Getting Into Games	Narratives about getting into games or realizing that making games/working in the game industry was a possibility	Playing around with Flash and just realizing that I could recreate Myst was something cool. And I don't think I was thinking about it like, oh I can make games. It was just I want to make this thing and see what I can do with it. And then it morphed into oh I can make games. I now made this education game.
Mentors	Narratives and stories about mentors that were instrumental in helping participants shape their professional pathways	While I was there at [school] we were fortunate enough to have [well known name] as our department chair. And she was hugely instrumental on getting me more onto a game design path. Prior to that I thought maybe like game art would be something more up my alley... She was more of a designer so she kind of lent that perspective to her students, as she called us her designer army.

Networking	Stories about the importance of networking or incidents where networking did or did not pay off professionally	It was through my networking. Because he knew me so when I applied for it, he knew I was good and I was not just—he knew from me meeting him over a year and meeting other people that also worked with [Studio] that even though I had no experience, I was capable and understood games and I was doing the extra mile outside of games, outside of work. So, the networking is important.
Programming	Participant narratives about learning to program and how things did or did not resonate with them	Well, neither of us knew how to program. So we didn't really know what we were doing anyway. But the teacher overheard us and he was like, 'Well if you need... If you want to be making games, you need to learn how to program.' And he hands us this giant tome. It's this huge C++ book. And basically we both kind of stared at it. I remember opening it up and just being like, 'Hello world? What the fuck? Like this isn't a video game.'
Value Codes		
Advocacy & Empowerment	Narratives and opinions and advocacy initiatives and participant's efforts to empower themselves and to empower other women in the industry	We have to invest in people. And we need a culture that values these perspectives. And it just doesn't right now. It's terrifying. This is why so many women have to adopt this masculine persona in the workplace of not talking about this stuff. To not be threatening. That's why Bethany Bay is so terrifying because I don't give a fuck and they can't fire me

Creativity	Narratives and opinions about creativity and fostering creativity among game design groups and colleagues	what I discovered is that I behave differently as a leader and as a result, people mimicked my behavior. And without knowing it, I facilitated conditions for collective creativity. And that's how we won. It wasn't me. It was us.
Sustainability	Stories about the effects of crunch time and participants' efforts to foster sustainable development practices and team schedules	So that—after a while your brain just stops. I was watching my team deteriorate to uselessness. To making things worse. Because you also have tired programmers. Also doing crunch and making mistakes.
Leadership	Narratives and opinions about leadership and how participants approach their own roles as leaders	I want to have a company that let's women have...working relationships without these politics there. Like for instance, my company has really pro-mother policies. Because...some women have children at 30.
Learning	Narratives and opinions and learning and how participants think about and approach learning new skills	Or even if you're not a programmer now, it doesn't mean you can't learn to code and then eventually get a programmer job. Is it going to be harder than the person who went and got a CS degree and has been programming their whole life? Sure. But if that's something that you really want and it really interests you, you shouldn't just not go for it. You should try.

Mentoring & Education	Narratives about participants' efforts to have a positive impact on the industry through mentoring and education initiatives	This is how we feel like we can impact the industry is through students and student development. If they're introduced to a different type of environment that's open and welcoming then you know, the League Honey stuff goes away...And we—I think that we can do that through student development and make a bigger change in the industry. Because then we can put these students in positions of power over time.
Safe Space	Participant reflections on GamerGate and how they take action to keep themselves and their family safe from being targeted	I keep silent about things. I'll go to want to re-Tweet something and then I have to pause because maybe I don't want to re-Tweet that or comment on that because I know that person is being targeted by GamerGate and that might alert them to my presence and I don't want that. There have been times that I've thought about doing a podcast or creating a YouTube channel...And I haven't because I am very scared of becoming a target just because I'm a girl.
Support Network	Participant reflections on the importance of having support networks and their opinions about what is important and how women can go about creating stronger support networks	And we need to have support systems for each other. And I think we need to be ruthless about promoting each other. I feel so strongly about that. If you reach out to me and are like, Bethany, I need to go talk to x, y, or z. My contacts are your contacts...I want to support you. Because I think that's how we change the industry. So I think those kinds of support networks are really helpful.

Appendix H

Additional Participant Education Data

The following tables and charts depict additional demographic information about the education experiences of the interview participants. Table D1 provides an overview of the undergraduate degrees earned by the interview participants. Each of the 21 participants earned at least one undergraduate degree, with the participants earning 24 undergraduate degrees in total. More participants majored in English than any other type of degree, followed by computer science.

Table D2 provides additional information about graduate degrees earned by the interview participants. In total, six of the participants earned graduate degrees.

Figure D1 organizes the degrees earned among the participants by institution type. Most of the participants attended traditional universities.

Figure D2 depicts where the interview participants earned their undergraduate and graduate degrees. In addition to the regions depicted on the map, one student earned her degree internationally in Australia and one participant earned one of her degrees from an online institution.

Undergraduate Degrees	Number of Participants
English	4
Computer Science	3
Art	2
Electronic Media Arts & Communications	2
Interactive Design & Game Development	2
Journalism	2
Liberal Arts	2
3D Animation	1
Business Administration	1
Geography	1
Neuroscience	1
Philosophy	1
Printmaking	1
Psychology	1
Total Undergraduate Degrees	24

Table D1. List of undergraduate degrees by degree title and number of participants.

Graduate Degrees	Number of Participants
Business Administration	1
Creative Writing	1
Digital Arts & Digital Media	1
Entertainment Technology	1
Geography	1
Serious Games	1
Total Graduate Degrees	6

Table D2. List graduate degrees by type and number of participants.

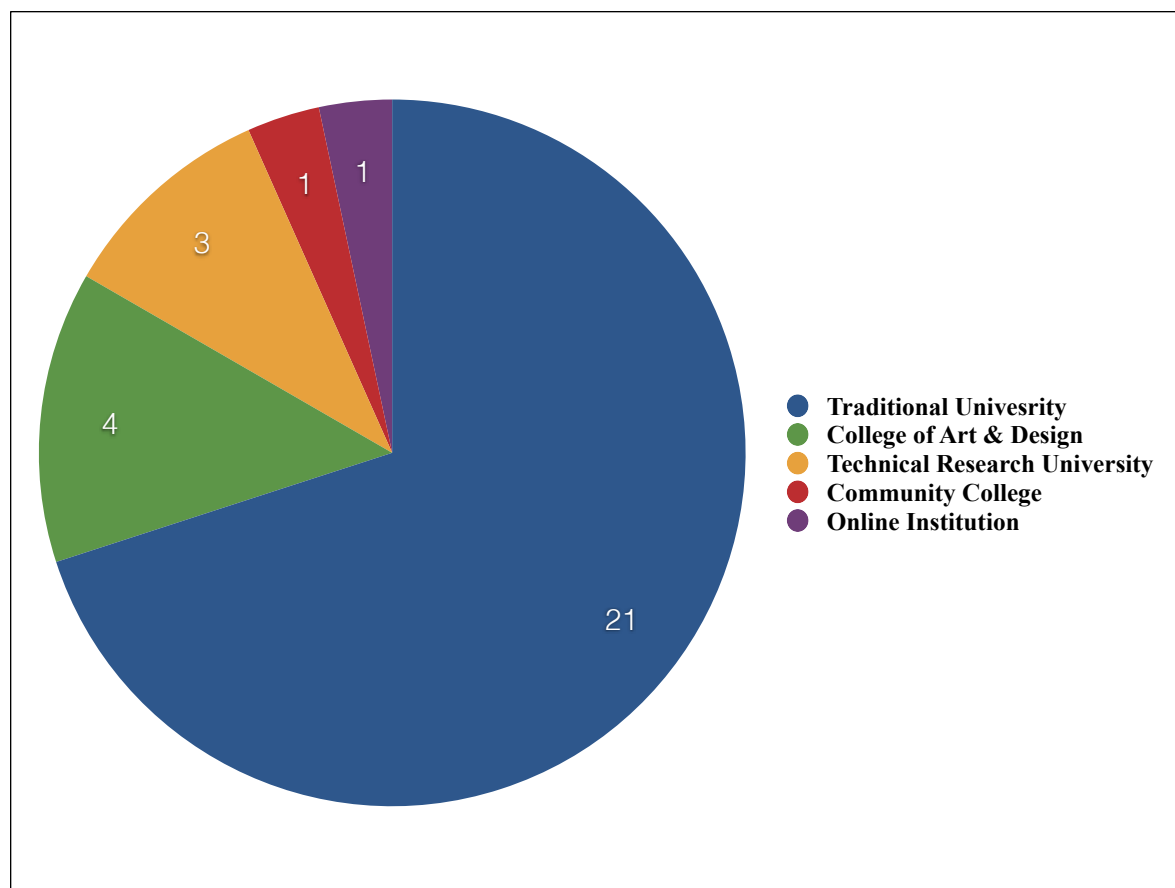


Figure D1. Number of participant degrees earned by institution type.

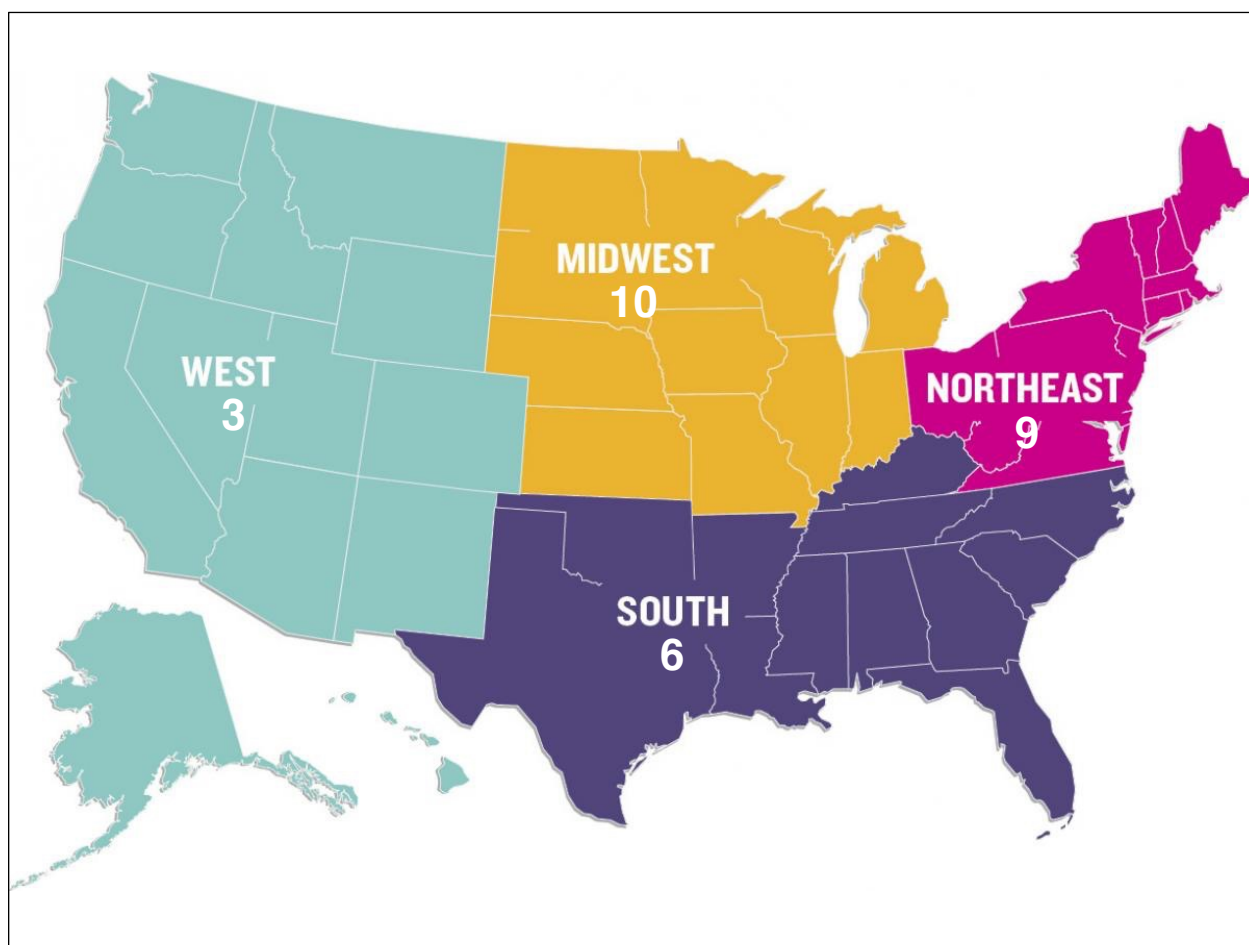


Figure D2. Number of participant degrees earned by region.