Female game developers in the Australian digital games industry

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Statement of authorship/originality

I declare that the work presented in the thesis is, to the best of my knowledge and belief, original and my own work, except as acknowledged in the text, and that the material has not been submitted, either in whole or in part, for a degree at this or any other university.

Debbie M. Taylor

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Abstract

Females make up half the population, and represent 47% of the digital game player market in Australia, yet women do not have comparative input and influence into the creation of digital games. Women are underrepresented in the digital games industry all over the world. In Australia, women's level of contribution to game development is much lower than the USA, Canada, and UK.

This thesis seeks to establish the factors that influence the low participation of women in this fast-growing industry, and to possibly find ways to reverse this trend.

Design/methodology/approach – A review of literature from the areas of computer science, IT, and digital games development was carried out focusing on the impact of social, structural and cultural factors, and how these may influence women choosing a career in the Australian digital games industry.

This study is empirical in nature using a Mixed-Method Grounded Theory approach. A database of all known Australian digital game companies was constructed. A census was then carried out with 356 digital game development studios across the country. From there, a separate "*Aussie Women Game Developers*" survey was conducted with thirty-five women working in the industry. From the survey respondents a subset of ten women participated in a semi-structured, in-depth, one-on-one, open-ended interview.

Abbreviations, Acronyms & Definitions

AAA	Games developed for major platforms with big marketing budgets
ABS	Australian Bureau of Statistics
ADGI	Australian Digital Games Industry
ASIC	Australian Securities & Investment Commission
.auDA	.au Domain Administration
BSc. IT	Bachelor of Science in Information Technology
CS	Computer Science
DCI	Digital Content Industry
DGI	Digital games industry
EA	Electronic Arts (digital game company)
GDAA	Game Developers Association of Australia
GDC	Game Developers Conference (held annually in San Francisco)
GTA V	Grand Theft Auto V
HR	Human Resources
IGDA	International Game Developers Association
ICT	Information, Communications & Technology (industry)
IT	Information Technology (field, faculty)
QA	Quality Assurance
TAFE	Technical and Further Education (vocational college)

1 : INTRODUCTION

1.1 Problem Statement

In much the same way watching broadcast television became a daily activity in the 20th century, with children racing home from school to watch cartoons, digital games have become an increasingly popular pastime in many Australian households during the twenty-first century.

Compared to the film or television industries, the Australian digital games industry (DGI) is still in its infancy. Yet is emerging as one of the fastest growing entertainment sectors, and is now more than double the size of the local movie box-office, with sales reaching an all-time high in 2008 to $1.96 billion (GDAA 2008) (Refer Figure 41 - Australia Games Industry Revenue 2006-2012.

Despite this growth, the Australian Bureau of Statistics (Australian Bureau of Statistics 2008) reported that during 2006-07, of the 45 game development studios in Australia, there were 1,431 employees; of which 154 (10.5%) were female. That equates to an average of 31 employees per business - employing an average of 28 men to every three women.

YEAR	SECTOR	BUSINESSES	FIELD	STATES & TERRITORIES									Business Ops	Production	MALES	FEMALES
				NSW	VIC	QLD	WA	SA	TAS	ACT	NT	TOTAL				
2007	DIGITAL GAMES	45	Employment (no.)	103	472	695	161					1431	223	1208	1277	154
2012	DIGITAL GAMES	84	Employment (no.)	122	256	141	16	46				581	150	431	530	51

Figure 1 - Comparison of ABS data from 2007 and 2012

In 2012, those figures changed dramatically, with the number of digital game development businesses in Australia increasing to 84, whilst the number of employees dropped to 581, of which 51 (8.4%) were females. This equates to an average of less than 7 employees per business – that is 6 men to less than one woman per studio (Australian Bureau of Statistics 2013). This thesis explores reasons for this change.

In contrast, in the same survey, the ABS reports that in the film and television industries, women represent 39% and 46.7% respectively and similarly, a recent study of the ICT

industry reveals that women make up 20% of the workforce (Australian Government 2013a).

According to Eve Penford-Dennis, a co-founder of Women in Games (Australia) who has worked in digital games since 1990, this imbalance has not always been so. Eve says that, 'during that time, the number of male developers has increased exponentially, whereas the number of women developers has stayed roughly the same' (Hill 2007, p. 1).

Notwithstanding, the digital games industry worldwide has long been known to be predominantly male. According to the International Game Developers Association (IGDA), based on survey findings (Gourdin 2005, pp. 9–10), the 'typical game development professional can be described as:

- ✓ Male
- ✓ White
- ✓ Heterosexual
- ✓ Not disabled
- ✓ 31 years old
- ✓ University/college educated
- ✓ Working in the industry just over 5 years
- ✓ A programmer, artist or designer
- ✓ Agrees that workforce diversity is important to the future success of the game industry'

According to an independent study undertaken in Queensland by Geneve et al. (2009), less than 10% of women actually work in technical roles developing digital games. In some instances, these rates were even as low as 5% in Australia (Hill 2007). In comparison, figures released in the USA (Gourdin 2005) indicate that women represented around 16% and in the UK 12% (Haines 2004). Conversely, Canada's digital game development female workforce is around 16% (Nordicity 2013), and Norway comprises of around 33% women (Ministry of Culture 2008), and Japan is believed to be even higher (Barnett 2010).

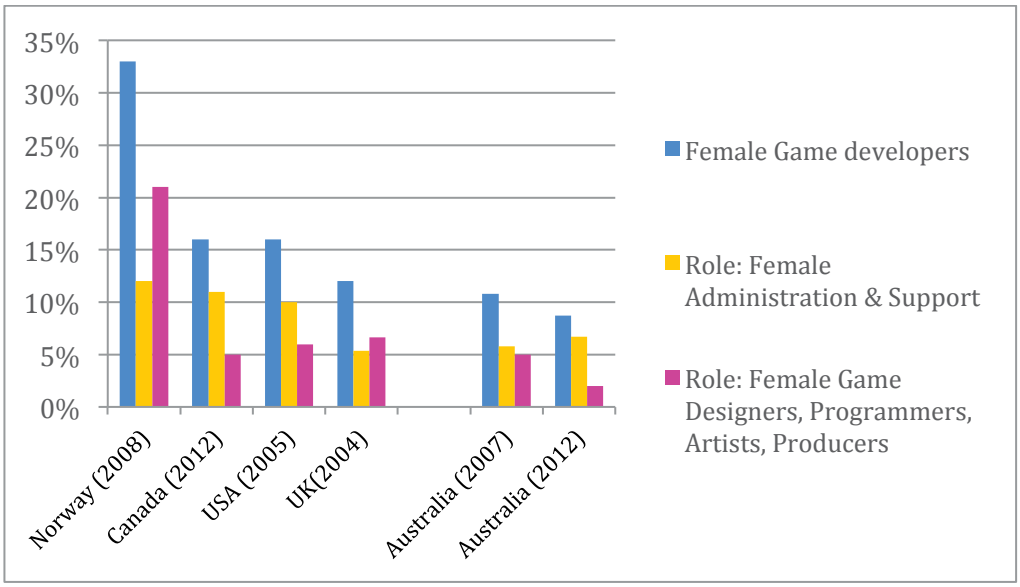


Figure 2 – Percentage of women working in the games industry throughout the world (2004-2012).

1.2 Research Question

Are there specific factors that continue to ensure women are underrepresented in the Australian digital games industry?

1.3 Personal Motivation

As an undergraduate student enrolled in the BSc. IT degree at the University of Technology, Sydney (UTS), the researcher noted that the number of female classmates declined significantly between first-year (2006) and final-year (2008) from around 19 women out of 189 students, to being the only female student in three out of four final-year programming subjects.

Re-enrolling in 2010, the researcher noted that within the new game development degree there were even less females enrolled than in regular IT subjects. For instance, there was only one female in the iPhone Game Programming subject and only two females in the Game Design subject that semester. As a game designer, with several published games, and ties to the local game developer community in Sydney, witnessing such a dramatic difference between the numbers of females enrolled in the IT and Game Development degrees within the same faculty at UTS, motivated the researcher to want to understand what influences this low participation of females in digital game development in Australia.

1.4 Aims & Objectives

1.4.1 Purpose and usefulness

It is unclear why the number of female employees in the digital games industry has been in decline since 2007, compared to males. Except from basic data collected by the Australian Bureau of Statistics in 2012, there have been no other recent studies that illustrate the current state-of-play regarding demographics within the digital games industry in Australia. In the USA, although the participation of women in both IT/CS degrees and game development degrees is still low, there is no significant difference in the ratio of men to women (McGill et al. 2012).

This thesis seeks to ascertain the number of women currently working in the Australian digital games industry, as well as determine whether women in this particular sector of the IT industry (where the average participation rate in the ICT industry is around 26%), have even lower participation in the Australian DGI (ABS 2008; Geneve, Nelson & Christie 2009). In addition, this research is looking to discover what level of creative input women have - that is, whether they contribute to the actual development of games, or work primarily in administrative or marketing roles.

1.4.2 Who might use this research

- Digital game companies interested in attracting more female game developers
- Game publishers interested in capturing the female market
- Schoolteachers and careers advisors
- Recruitment agencies looking to hire women to work within the industry

1.5 Organisation of this thesis

This thesis summarises research into factors that affect the participation of women in the Australian digital games industry. It is divided into eight chapters, with 7 appendices.

The current chapter introduces the under-representation of women in the Australian Digital Games Industry and defines many of the terms, which are used throughout this thesis. Other terms are discussed in context. The second chapter presents a review of the literature covering the digital games industry in Australia, the local game player market, and the connection between both the IT and the digital games industries. The focus of this chapter clarifies women's participation in digital game development and

addresses factors that influence their participation in the industry. Chapter 3 describes the research methodology used, along with other methods that were considered. The fourth chapter explains the research design and approach and describes how the data was collected. Chapter 5 covers the analysis of the quantitative data and Chapter 6 presents the findings of the analysis of the qualitative data, and relates them, where possible, to similar studies carried out by other authors. Chapter 7 offers some suggestions from interview respondents. Chapter 8 is the Conclusion.

The appendices contain information, which it was decided, could not be included within the main text without interrupting the flow of the discussion.

2 : LITERATURE REVIEW

This chapter examines the literature that is central to women's participation in the digital games industry.

Section 2.1 explains the choice of literature that was used for this review.

Section 2.2 provides background on the Australian digital games industry.

Section 2.3 examines gender and girls playing digital games.

Section 2.4 describes participation, under-representation and diversity.

Section 2.5 explores the overarching theme of the *Pipeline* issue – Higher Education degrees offered, enrolments, attrition.

Section 2.6 Discusses the early influences of career choice for girls and young women.

Section 2.7 Examines the barriers to recruitment & issues with retention.

2.1 Choice of literature

The literature chosen for this study covers four broad areas. Firstly, to give the reader some context, an explanation of what digital games are in relation to this study, along with a brief history of the DGI in Australia. Secondly, it examines the game player market in Australia and some background about digital games and gender – how girls play, female game characters and how games are marketed to females. Next is an explanation of participation, under-representation of women in the Australian DGI, and diversity within the industry. The main body of work covered in the next section explains the connection between the IT industry and the digital games industry, which goes on to describe why many of the influences, that women in IT face, are assumed to also be experienced by women in the DGI. Various reports are then explored regarding

the influences, and barriers, both real and perceived, which prevent women from entering the industry, or choosing to enrol in IT/CS and game-related degrees. These are broken down into three areas:

- **Pipeline Issue** – how young women choose not to enrol in IT degrees (Section 2.5).
- **Early influences of career choice** – What influences affect young girls to shun technology and games, and empirical research conducted in the US and UK where initiatives were proposed to encourage young females to consider studying IT at university level. (Section 2.6).
- **Recruiting & retaining** – the influences, barriers (or perceived barriers) that prevent women already in the workforce from entering the industry, or once they do enter, why they then choose to leave (Section 2.7).

Due to a lack of research carried out in Australia, many of the references in this thesis cite international articles written about both IT and the digital games industry where terms and examples are often used interchangeably. These papers are predominantly from the USA and UK, where the cultural context is similar to that of Australia.

2.2 The Australian Digital Games Industry

2.2.1 Definition of a digital game

Digital games, also known as computer or video games, are played for purely entertainment or amusement:

- on a PC or Mac computer from a DVD, or downloaded via the internet
- online over the internet,
    - such as Massively Multiplayer Online Roleplaying games (MMORPG)
    - via social networking sites, such as Facebook
- on consoles such as Sony PlayStation™, Microsoft Xbox™, Nintendo Wii™
- on handheld devices such as Sony PSP™, Nintendo DS™ and Ouya™
- on mobile devices such as the iPad™, iPhone™ and Android™ smartphones and tablets.

2.2.2 What is an Australian digital game company

For the purpose of this study, irrespective of its legal status, an Australian digital game *company*, *business*, *developer* or *studio* will refer to any entity, which creates games for entertainment with the express intent of selling commercially to the public. Throughout this thesis, these terms have been used interchangeably, but essentially mean the same thing. Furthermore, as per the methodology used by the Australian Bureau of Statistics (Figure 43 – Australian Bureau of Statistics data collection methodology):

> In scope businesses will generally have the capability and staff to develop a digital game from start to finish, but may outsource particular components of a project other businesses with more technical expertise.... These businesses are referred to as digital game developers throughout this paper (Australian Bureau of Statistics 2013).

Conversely, excluded from this research are those companies whose core business may be in creating interactive digital content, but not necessarily digital games (Refer Figure 3). This may be in the form of online advertising, interactive DVDs, or simulations. Likewise, games that are not sold to the public, but are rather commissioned by third-party companies (Marczewski 2013), which are classed as Serious[1] games or Advergames, where their primary purpose is for training, investigation or advertising (Adams 2009) and which often bridge the gap between games and corporate environments (Pratt 2007), rather than for purely entertainment purposes.

Additionally, other out-of-scope businesses include those providing support services to game development businesses, such as animation or sound studios, or businesses that primarily develop board games or for gaming or poker machines.

	Game Thinking	Game Elements	Game Play	Just For Fun
Gameful Design	✔			
Gamification	✔	✔		
Serious Games / Simulation	✔	✔	✔	
Game	✔	✔	✔	✔

Figure 3 - Types of digital games based on purpose (Marczewski 2013)

[1] Refer Figure 42 - Serious Games Taxonomy - designed by Sawyer & Smith

2.2.3 The rise and fall and rise again of the Australian DGI

The digital games industry in Australia is just over 30 years old, with the first game company, Beam Software established in Melbourne around 1980 (DeMargheriti & Wang 2008). Throughout the 80's long-term veterans of the industry such as the Strategic Studies Group and Microforté were formed and are still operating today (Centre for International Economics 2005).

With the introduction of the Windows PC into households in the early 90's came some of the largest game development studios we have seen so far, such as in 1994 - Tantalus, Torus, Ratbag, 1995 - Auran, Blue Tongue, Wildfire, 1999 – Krome, 2000 – Irrational, Pandemic, up until the introduction of the console when PlayStation was introduced in 2002. By 2003, according to a report commissions by the *Standing Committee on Communications, Information Technology and the Arts,* the Australian DGI had grown to 50 companies (Australian Government 2004), with more than 700 full-time staff working directly on games. Between 2005 and 2006, the number of staff in the major studios grew again by 50% and employed up to 400[2] people in their heyday (Australian Research Council Centre of Excellence 2011).

In 2009, game companies worldwide started to feel the crunch of the GFC (Huntemann 2010), being forced to lay off hundreds of staff (Australian Research Council Centre of Excellence 2011) with several pioneer studios such as Pandemic, Krome and THQ all closing their doors between 2009 and 2011. The main reasons were that, in 2010 the Australian dollar rose to the highest it had been against the US dollar since it was floated in 1983 (Reuters 2010) making Australia less attractive to overseas publishers. Tax breaks given to overseas game developers, particularly in Canada impacted the amount of work available for Australian companies and the decline of the middle-ground games – those that sit between the small, independent games and the major AAA titles like Grand Theft Auto V, or Call of Duty: Modern Warfare 3 (Darchen 2012).

In 2012, the ABS conducted a census (Australian Bureau of Statistics 2013) which showed that even though the number of people employed in the industry had declined by almost 60% (that is, 57% down for males, and 67% down for females), since the previous census in 2007 (Australian Bureau of Statistics 2008), the actual number of game studios increased by 85%. This is believed to be the result of those people who,

[2] According to respondents KAL2 and SOM2 in their interviews with the researcher.

after they had been laid off from the larger AAA studios during the GFC, opened their own smaller indie studios. The more recent indie studios are now more focused on the changing player demographics, which have been driving the development of these newer business models. Other contributing factors are, the ease of publishing via online stores through Steam®, and for mobile apps on Apple's AppStore™ and Google's Android Market™, compared to developing console games which require expensive licences (ACMI 2008). During this most recent phase, Justin Brow, a Queensland researcher of the Australian DGI commented that,

> Far from imploding, the 'games' industry is in a constant state of evolution and there is arguably more capacity and opportunity for innovation these days than ever before (Brow 2011).

Because of the total shift in the industry since 2011, part of this study will concentrate on collecting new up-to-date figures to determine whether this trend has changed since June 2012.

2.2.4 The connection between the IT and the digital games industry

According to both the Australian Bureau of Statistics (ABS) (Australian Bureau of Statistics 2013), and the Interactive Games and Entertainment Association (IGEA) (Bond University 2012) - an industry association representing Australian and New Zealand companies, the digital games industry is considered part of the entertainment sector, employing people from a variety of sectors including level designers, programmers, storytellers and graphic artists. The *Innovation Business Skills Australia* (ISBA), an Industry Skills Council authorised by the Australian government has developed a Digital *Games Development Competency Framework* (Refer Figure 4) which clearly shows the intersection of IT, Design and Art (Australian Research Council Centre of Excellence 2011).

Referring to this framework, IT taught in universities covers all of the Development section as well as Quality Assurance and Project Management under the Management section, and Digital Media Design under the Design Section.

Figure 4 - Digital Games Development Competency Framework

2.2.5 Game Development in tertiary education

Although it is not a requirement for anyone entering the digital games industry to know how to program, as Fullerton says in (Lee 2006), information technology (IT) and computer science degrees most closely align with digital game development, as many universities now offer degrees in game design and development, usually within IT faculties. The most likely reason is because when digital game companies first start out, their initial focus tends more to be on the technical side, that is, the actual programming of digital games, rather than the graphics or the game design itself (Tapia 2006).

IT/CS courses at universities are usually broken into three or four streams that broadly cover software development (programming), networking (infrastructure), information systems (data), and business (management). Although game development is often associated with software development, in order to complete their courses, game development students are required to not only master all of the core IT subjects, but also need to be competent in a range of skills beyond the technical (Gourdin 2005). The extra subjects, usually taught in Arts and Design faculties, include graphics, audio and animation (International Game Developers Association 2006; Australian Research Council Centre of Excellence 2011). (Refer to Figure 5)

Figure 5 - Intersection of roles in digital game development - taught by faculty

Job roles within game creation

The focus for this research is on females who participate in game development, so for the purpose of this study, only those women whose job title or role comes under the title of "Creates Games" (as shown in Figure 6) will be included.

JOB ROLES WITHIN A DIGITIAL GAME COMPANY	
CREATES GAMES	**DOES NOT CONTRIBUTE TO THE CREATION OF GAMES**
Producer	Business Development
Game Designer, Game Mechanics	Office Administration, HR, Reception
Storywriter, Narrative, Theme	Accounting & Finance
User Interface & User Experience Designer	Community Manager
Level Designer	Sales & Marketing
2D Graphics, Texturing, Concept Artist	Web developer
3D Modeling, Rigging, Animation	Community Manager
Visual effects	
Music, Sound effects	
Game Programmer, Tools Developer	
Networking, Database, Systems Operations	
Testing	

Figure 6 - Job roles within the digital games industry

2.3 Gender, girls and playing digital games

When it comes to using computers and playing digital games, both girls and boys can be equally skilled. It is more likely however, that more boys will play games than girls (Agosto 2004).

Referring to various studies Agosto (2004) notes that both sexes of preschool children demonstrate a similar interest in computer games. However, as girls mature, their interest in games and the amount of time they spend playing, declines (Verbick 2002). Electronic Arts (EA), one of the world's largest digital game companies' own research confirmed that '40% of teenage girls played video games versus 90% of teenage boys and most girls lost interest in games within a year' (Waters 2006, p. 1). The cause is uncertain, but it has been widely suggested that this is due to a lack of games available that appeal to girls, because most games are designed and specifically marketed towards boys and therefore geared towards boys', rather than girls' preferences (Chaika 1996; Verbick 2002; Agosto 2004; Adya & Kaiser 2005).

In the early 1980's when the home video game consoles first became widely available, gaming was not relegated to girls or boys. Titles such as *DigDug*™, *Q-Bert*™ or *Frogger*™ were largely asexual lacking any sort of gender bias with appeal across the board. As the game industry evolved and games became more sophisticated, titles began to favour boys over girls with titles like *Metal Gear Solid*™ or *Call of Duty*™ outselling *Barbie*™ titles (Wikipedia 2010b). Even if more appealing games were available, girls in general still know less, buy less, and spend less time playing digital games (Agosto 2004; Haines 2004). Chaika (1996) blames this gender gap in games for girls partly on the game industry itself, but maintains that if it were simply a 'matter of high demand without supply' (Chaika 1996, p. 10), then girls would have had the games they wanted already. There are however several factors that come into play to perpetuate this gender gap, whilst some are market-related, many of them are social (Chaika 1996).

2.3.1 The Australian game player market

Most people could be forgiven for thinking that digital games are the realm of the teenage boy. These days' though, women over the age of 18 represent a significantly greater proportion (31%) of the game player market in Australia, than boys who are 17 and younger (19%). Over the past nine years, the proportion of females who play games has steadily increased from 38% in 2005, to 47% in 2011 (Refer Figure 7), largely due to

casual mobile, and online games. It is predicted that by the end of 2013, female game players will equal males (Bond University 2009; Bond University 2012).

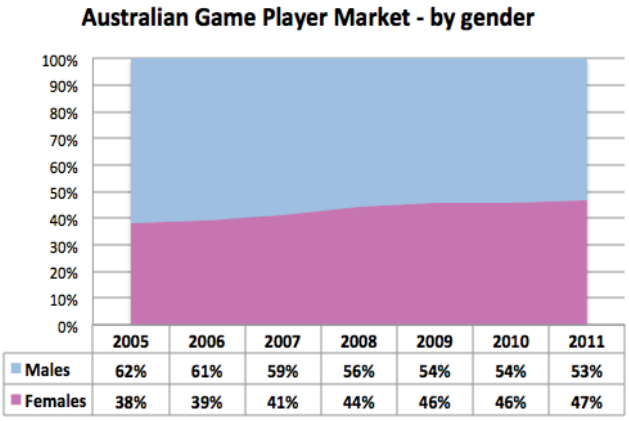


Figure 7 - Australian Game player market (Bond University 2012)

2.3.2 Girls play differently to boys

An overwhelming majority of computer games include male characters, speed, action, violence, defeating opponents, and repetition, which most young girls find boring (Gorriz, C.M. & Medina 2000; Verbick 2002; Haines 2004; Denner et al. 2005; Heeter et al. 2009). Whereas boys prefer to play alone, girls would much rather play games that enable them to engage and communicate with others collaboratively rather than in competition (Gorriz & Medina 2000). Sheri-Graner Ray, a games industry veteran of over 20 years says that,

> Men tend to be more exploratory and risk-taking learners, so they are more likely to dive into games by banging all the command buttons until they figure them out. Women tend to want to know how it all works before they put their hands on the controls. At this point, however, most tutorials are designed for exploratory/risk-taking learners (Pratt 2007, p. 2)

Pratt (2007)goes on to emphasize the importance for game developers to ensure that the way tutorials are designed, that they need to be aimed at both sexes if they want to target both markets.

In general, girls choose games that have storylines that focus on human relationships, have strong female characters, use real-life settings, and do not contain violence (Gorriz, C.M. & Medina 2000; Verbick 2002; Agosto 2004; Haines 2004; Denner et al. 2005)

Chaika (1996) draws attention to an industry brochure that claims, '85% of young women surveyed indicated that computer games would be fun to play if more titles were designed with them in mind' (Chaika 1996, p. 9).

2.3.3 The underrepresentation of female game characters

Whilst visiting a game store, Chaika (1996) observed that out of 259 titles, only 6 had female characters. Six years later, Aphra Kerr (Kerr 2002), a doctoral student from Ireland remarked that even though the number of female characters in games had increased since then, they were still outnumbered by their male counterparts. Ten years hence in 2012 digital games are still considered a 'boy's club' (VonHellens et al. 2001, p. 170), according to a study conducted by a digital game research firm, *Electronic Entertainment Design and Research*, which looked at 669 games with protagonists and noted that only 24 had female protagonists. This is consistent with various researches that claim that the avatars women are expected to play are still usually male. Underrepresenting and misrepresenting females in computer games can cause undesired consequences according to Agosto (2004), by impressing to girls that boys are the adventure seekers, while they stand on the sidelines, or else are totally absent from the action.

2.3.4 How games are marketed to females

While Gorriz & Medina (2000) assert that older girls prefer educational games, Chaika (1996), contradicts this by suggesting instead that it is more likely to be the way games are marketed to girls. Whilst visiting a games store she noticed that games for girls were displayed under '*Education'*, emphasising to girls that computers are merely tools, whilst games for boys were placed on the *'Fun/Adventure'* shelves. If a game is claimed to be educational, children automatically assume that it is boring, and will frequently avoid playing them outside of school (Kinzie & Joseph 2008), resulting in missed opportunities to gain valuable skills. If producers choose to create only educational titles for girls, this can only perpetuate differences in how girls feel about computers and technology. If girls only ever interact with computers in the classroom, then girls will never get to share the excitement and fun that boys experience (Adya & Kaiser 2005). Several studies have stressed the need for parents to realise that by giving their

daughters only educational games (Agosto 2004), 'they are not exposing them to the more play-oriented, creative, fun software alternatives' (Chaika 1996, p. 11).

This worldwide marketing ploy is thought to be because brothers and fathers make most of the decisions on behalf of the family when it comes to games and technology purchases. As one of Haines' (2004, p. 7) research participants in the UK explains:

> Right now, women don't tend to buy games at Electronic Boutique, but do buy games on-line or at Wal-Mart. That's because EB is what's called a "male-cultured space" and women don't feel welcome. Women are aware of publicized games but they don't pay attention to the commercials on TV because they seem to know that the ads aren't targeted to them. Often, the woman will play whatever the boyfriend bought.

With this in mind, as girls often do not get to choose which games they play because they are chosen for them, this makes is even more difficult for game producers to cater to the female market (Haines 2004).

2.3.5 Games are created by men

It is no coincidence that games that appeal to game programmers happen also to be the same types of games that the industry, which has always been predominantly male, has been producing for years (Cassell & (eds.) 1998; Haines 2004). Therefore, it is believed that game developers feel compelled to continue injecting their own taste and desires as design guidelines into their games (Kerr 2002). Herz explains it this way in her book, Joystick Nation:

> Girls are looking for experiences, and boys are looking for bragging rights… the problem is, videogame designers being mostly male, can't seem to figure out what girls want in a videogame... catering to boys is much more fun. Videogame companies are very good at it and it makes them rich. And they don't want to mess with a winning formula (Herz 1997, p. 15).

Furthermore, Kerr (2002) draws attention to the fact that most of the development teams she interviewed during her research 'were almost exclusively composed of white males aged between 23-40 years of age' (Kerr 2002). In some companies, there were no female developers at all. A rare exception in the game industry was with Maxis, the developer of the best-selling game, The Sims. The designer, Will Wright said that making the game appeal to women was deliberate and believes that they were successful in

doing so because the production team comprised of 40% females (Haines 2004; Pratt 2007). However, changing the percentage of women game developers might not have any effect at all on the choices of content produced, as (Kerr 2002, p. 10) maintains, 'if women have already been socialised into a wider male production culture'.

2.3.6 Games industry responsibility

If the market now spends several billion dollars each year on games - which for almost 20 years has remained predominantly male, then the potential should be equally substantial for the female market (Chaika 1996). Despite this, however, the amount of current research data available about whether the digital games industry is more accommodating towards girls nowadays is non-existent. Whilst the male-oriented market constantly diversifies (Chaika 1995) with its thousands of titles available for boys, the female market remains relatively stagnant (Kafai et al. 2008). In 2006, EA's Chief Operating Officer at the time, David Gardner, remarked 'We are only reaching a small proportion - not only geographically, but also genetically', and recommends that the digital games industry should look towards the 'film business, as the movie industry doesn't just make films for boys!' (Waters 2006, p. 1).

Apart from a brief mention about The Sims (Haines 2004), much of the research reviewed for this thesis, continually referred back to Barbie Fashion Designer as a revolutionary breakthrough for girls, although this title was released almost two decades ago in 1996 (Agosto 2004; Adya & Kaiser 2005; Denner et al. 2005; Kafai et al. 2008).

Researchers and industry experts may claim to know what girls like to play; however, it needs to be asked whether game developers should continue creating games that are built upon the stereotypes of what girls *supposedly* want. Instead, should they concentrate on making games, which embrace gender-neutral roles, since the production of girl-specific games has not led to any increases in the number of women employed within the digital games industry (Denner, Bean & Werner 2005).

Regardless of which direction game companies take, in order to engage and sustain the female interest, the industry needs to pay more attention to creating software that focuses more on the human, social, and cultural aspects, rather than merely focusing on technical advances such as speed, power and better graphics.

2.4 Participation, under-representation and diversity

2.4.1 Definition of participation

Quoting from a recent *Information and communications technology workforce study,* the definition of participation, in terms of the labour-force, is "the extent to which the population is willing and able to work" (Australian Government, 2005a), and is measured as a percentage of the working-age, civilian population in an economy between the ages of 16 and 64, who are either employed or unemployed, but looking for a job.

A range of social and economic considerations, barriers and work preferences influence individual participation, such as education, training, workplace policies and procedures, employer attitude, workplace culture and the availability of childcare (Department of Innovation 2008). Looking at research into women's participation in the ICT industry suggests to look beyond the statistics, as participation rates alone cannot explain the phenomenon of women's under-representation in Australia's digital games industry to (Trauth et al. 2004).

2.4.2 Financial benefits of increased participation

In a report commissioned by the Australian Government titled, *Women in male-dominated industries*, Australia now ranks fourth in the world in talent shortages, well above the global average. Participation has been undeniably linked with productivity, profitability, employee commitment, and retention. It notes benefits such as greater productivity, and higher profitability when there is increased gender diversity in male-dominated industries (Australian Government 2013c).

Whilst Graner-Ray (2003, p. 148) claimed 10 years ago that 'things have been going well with male-centric teams and that titles are selling well, with the industry out-grossing the film industry' - most would agree, but were it not for the fact that the game industry is growing at a tremendous rate, yet its market is not. Burrows (2013) reported that some game company CEO's recognise now that they need more women game developers since 50% of their customers are women and the over 18 demographic is the fastest growing. According to EA's David Gardner, the videogames industry continues to 'fail women by not producing suitable content, 'If EA cracked the problem, the firm could add a billion dollars to its sales' (Waters 2006, p. 1).

2.4.3 Participation in ethnic cultures

Whilst India and China are similar in both terms of economic environment, and low representation of females in education, women in both countries have more positive attitudes toward IT careers and are represented well in careers related to IT (Adya & Kaiser 2005). Similarly, the under-representation of women is not worldwide as,

> In certain countries such as Greece, Turkey, Spain, Portugal, Mauritius, Romanic countries (e.g., France and Italy), North African countries, Arabic countries, and South American countries, the representation of women in computer science is high and constant (Clayton et al. 2009, p. 154).

For instance, in Mauritius, since 2003 women have consistently represented 51% and 49% of the workforce in information systems and computer science, respectively (Trauth et al. 2008).

2.4.4 Why gender diversity matters in game development

Women's inequitable participation is not a new phenomenon, having been cited as a concern in the literature of different disciplines including ICT, and gender studies, for a number of decades. Women have historically been under-represented as both users and developers of digital products. Most IT professionals would agree that the effect of gender balance on productivity and team processes, can and should lead to positive outcomes. Not having women on development teams may result in technology innovations focussing more on 'doing things faster, and less on doing new things' (Woszczynski et al. 2003, p. 1).

As with any other creative industry, the lack of women developing digital games will almost certainly guarantee a single-sided approach (Egan 2005). According to Jessica Hammer, a games design lecturer speaking at a *Women in Games* session at GDC 2010, gender diversity correlates positively with creativity in any group effort. 'It's not a matter of if there were more women game developers that there would be more girl-friendly games, but rather there would be richer games' (Hammer 2010b, p. 1). As a game design lecturer, she believes that both men and women have something to contribute to game design, and that getting only a male perspective makes games one-dimensional.

Likewise, ensuring mixed project teams allows them 'to compensate [for] each other… we combine points together and we get more complete' (VonHellens et al. 2001, p. 119). Similarly, because games are creative products it is vital to keep in mind that each person brings their own individual life experience into that creation process and that not only are their ideas and assumptions, but also those life experiences, are reflected in those products. Therefore, it is more likely that having a diverse workforce will better mirror the diversity of preferences within the digital games market (Gourdin 2005).

In industries where innovation is highly regarded, diversity of life experience is often linked with profit. Car manufacturers are an example of where the hiring of women engineers is considered important, especially in the initial design phase where small details, such as seat size and ergonomics are concerned. The industry discovered that having women designers improved the likelihood that these details were embedded into the main design from the beginning rather than being added as an afterthought. It has been suggested that the digital games industry might benefit from doing likewise (IGDA 2005). There have, however, been studies that refute that having gender heterogeneous teams does not necessary lead to an increase of ideas or greater innovation, but may increase efficiency (Fila et al. 2011).

In an ABC Radio interview with Tony Reed, the CEO of the Game Developer's Association of Australia (GDAA) shortly after the release of the most recent ABS statistics on the Australian DGI, said:

> It is an aim of the GDAA to promote and improve gender equality in the Australian game development industry…
>
> … The organisation believes strongly that an absence of discrimination and a workforce that reflects the gender, racial and ethnic makeup of a modern Australia will drive creativity and innovation, and introduce different perspectives that will advance the sector (Golding 2013, p. 1).

The most pressing reason perhaps for digital game companies to consider employing more women game developers is to better reflect game player styles and content that would interest a broader and more diverse game player audience (Graner-Ray 2003), and gain a competitive edge by expanding into the largest remaining untapped market for games, that is, the female market (Haines 2004). In order to have more diverse games that cater to a wider audience the games industry needs a greater diversity of people (Moore 2013).

2.4.5 The under-representation of women in the Australian digital games industry

The underrepresentation of women entering the digital games industry (as compared with their representation both in the population and also in the workforce as a whole) is recognised as a "pipeline" issue (Tapia et al. 2007) as the number of women graduating from computer science degrees has been in decline for some time (Carmichael 2008). Furthermore, research has yet to determine exactly why female students then decide not to pursue IT as a career after graduation.

Despite numerous initiatives to recruit more women into the IT industry, these efforts have often proved unsuccessful (Tapia et al. 2007). This decline has been traced to experiences that female students face in middle and high school.

The main cause has been found not to be a lack of ability, but rather a lack of interest by girls about, technology, computers and digital games (El-Nasr et al. 2007; Tapia et al. 2007).

This lack of interest ties directly into the perception that computers and games are masculine pursuits (Haines 2004), and is further reinforced by cultural expectations and social influences (Tapia et al. 2007).

Previous studies have suggested that there is a definite connection between playing games, gaining technology skills, and positive student performance in programming classes (El-Nasr et al. 2007). Likewise, research has confirmed that getting students to make computer games can lead to a definite increase in IT skills and confidence in terms of computer proficiency (Denner et al. 2005; Werner et al. 2005; Tapia et al. 2007; El-Nasr et al. 2007).

Various projects have been developed using all-girl game design workshops. These classes act as motivators to increase girls' exposure to computers by teaching them basic computer science concepts (Carmichael 2008), game design, educating them about the digital game industry, and demystifying technology and the IT profession in general (Tapia et al. 2007). The aim of these workshops is to encourage girls to consider taking related subjects later on in high school and at university.

The purpose of this literature review is to understand the intersection between gender and digital games, by exploring the various influences that affect women choosing to pursue a career in digital games development. In particular, by identifying the

connections between how and why females play digital games, how encouraging girls to create and play games improves IT skills and self-efficacy with computers, and ultimately how best to attract young women into the digital game industry.

2.4.6 Individual Differences

To help explain the low participation of women in IT, Trauth (2002) compares two dominant theories; the essentialist and the constructivist. Essentialism is the claim that male and female natures have biologically or psychologically imposing gender-based limitations (Acker 1998). An example of this might be how it is often said that women can never be as good as men in science, maths or computing. Supposedly this is hard-wired and cannot be changed (Wajcman 1991, p. 9). Trauth et al. (2004), maintains that this essentialist view reinforces gender stereotypes, perpetuating the notion that gender categories are predetermined and fixed. In contrast, social construction theory (also known as the *theory of individual differences*) as developed by Trauth focuses on the similarities between men and women as individuals, but locates the cause of this underrepresentation of women in the establishment and continuance of a masculinised work culture, which ensures that women are largely excluded from IT work and any educational steps leading up to it (Trauth 2002; Trauth et al. 2004). von Hellens (2001) adds that female employees in the IT industry have no other alternative but to masculinise themselves by accepting and embracing their '"odd girl out" status by developing coping strategies to attempt to fit into this male domain' (VonHellens et al. 2001, p. 101).

According to the *individual differences* theory, 'inherent personality traits' and manifestations of 'different external influences' (Adya & Kaiser 2005, p. 232) make people unique. Factors influencing a woman's choice to pursue, and stay in the digital games industry are a combination of both personal characteristics possessed by the individual, as well as influences experienced by the individual. Personal characteristics include personality traits, abilities, interests, and enjoyment of computers. Whilst personal influences refer to early experiences with computers, as well as people who have influenced the person we are today, such as our role models and mentors (Trauth 2002; Trauth et al. 2004). Likewise, research conducted on women in the ICT industry, revealed similar personality characteristics, saying they were 'powerful people: forthright, strong, driven, ambitious, mathematical, less social than other women, logical and competitive' which some women said made them feel like the "odd girl out" (Trauth

2002). These women considered themselves more assertive and competitive compared to other females.

2.5 The "Pipeline" Issue

Much of the existing research in the area of women's under-representation in IT has been attributed to what has become known as the "pipeline issue" (Tapia et al. 2007). That is the transition from high school to university, and then onto industry. For whatever reason, young women are discouraged from enrolling into IT and game development degree courses in university. Later on though, if they do make it into industry, the problem then develops into the "leaky pipeline" (Hammer 2010a; Prescott & Bogg 2013e), where the issue then becomes, how to retain women in the industry. First, though women need to be educated, skilled, and trained just as men are in game development.

2.5.1 Game Design & Game Development degrees offered in Australia

Tertiary degrees in Computer Science, and more recently, under the broader heading of Information Technology have been offered by Australian universities for decades and have largely served the digital games industry in Australia since the 1980's. However, the majority of degree courses, which specialise specifically in the design and development of computer games have only been around since early this century and have steadily become popular over the past five years.

Previously, game-related courses were the domain of TAFE and private colleges, with the Academy of Interactive Entertainment (AIE) offering the first Certificate IV course in game development back in 1996 (DeMargheriti & Wang 2008).

As at 2012, there are now a total of thirty-four degree and diploma courses dedicated specifically[3] to game design & development being offered at Australian universities. (For a complete list of degrees refer to Figure 44 - Australian tertiary courses specifically in game design and development (2012))

Twenty-six degrees are offered within IT faculties, and a further eight are being taught

[3] *Specifically* meaning that it has the phrase 'game development', 'game design' or 'game programming' in the course title name. There are of course other degrees that teach 3D animation and art, which are skills used in game development, but those courses do not focus solely on creating digital games.

within the various Art & Design faculties across the country, with the top three states being, Victoria offering 12, Queensland 9 and NSW 8 (Refer Figure 8).

		2012 Enrollments	
State	No. of Courses	Males	Females
NSW	8	917	177
VIC	12	555	67
QLD	9	150	19
WA	3	50	3
SA	1	45	5
ACT	1	1	0
	34		

Figure 8 – Enrolments in Australian game development courses by State (2012)

2.5.2 IT and Game Development enrolments

At the start of 2012, across those same 34 game-related courses, a total of 1,989 students were enrolled, of which 271 were female and 1,718, were male.

Major	Faculty	Total Enrolled	Females	Males
Game Design	Arts /Design	381	94	287
Game Design	IT	1,608	33	191
Game Development			131	1,098
Game Programming			13	142
		1,989		

Figure 9 - Australian 2012 enrolment numbers in Game-related degrees by Major/Faculty

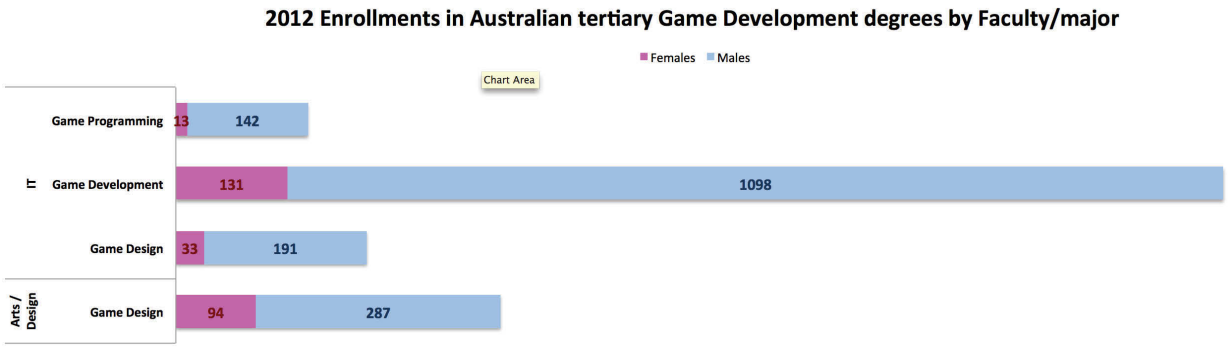


Figure 10 – 2012 Game-development degree enrolments by Faculty/Major

It is quite obvious from the above graph that the proportion of females to males enrolled in the IT faculty courses is a lot lower than in the Arts and Design faculties, teaching a similar curriculum.

2.5.3 Attrition

According to Australian Government statistics for *Undergraduate Applications, Offers and Acceptances for 2012* (2013b), female Year 12 students are more likely to apply for university entrance than males. Similarly, later on, 'women under 30 are more likely to hold a bachelor degree than men of the same age' (Tovey 2013).

Yet once enrolled, in the field of IT the student attrition rates are of concern to universities, specifically because of current shortages within the industry, and in particular, for women (Katz et al. 2006). Surveys conducted by the Australian government indicate a combination of factors, which contribute to the withdrawal rate for female students. Contrary to commonly-held beliefs, female students are no more likely to be impacted by life issues like dealing with family, loss, illness, pregnancy, or work commitments than male students, and more often they cited causes such as the university environment not being welcoming, isolation, and difficulty obtaining help when needed, as reasons why they eventually dropped-out (Roberts et al. 2012).

Issues relating to courses blamed the teaching environment, which does not suit the way women, learn. Many females expressed that classes were boring (Katz et al. 2006), and not delivered in a way they easily comprehended. Whilst the pace of teaching meant that they could not keep up (Roberts et al. 2012). According to Pratt (2007) game design tutorials follow a distinctly male learning pattern that females find alienating and uninspiring. This sentiment is also shared by many students who stay the course and confirms studies that IT courses are 'ranked as having the lowest levels of enriching educational experiences' (Roberts et al. 2012, p. 21). Suggestions have been made to introduce smaller group activities that encourage active rather than passive learning, increasing levels of interaction with faculty and students making it easier to ask for assistance which in turn will help students feel less disconnected and tackle the issue of boredom (Schweitzer & Brown 2007).

2.6 Early influences of career choice

Although much of the published research discusses women working in the IT industry or young women about to enter university, it is apparent that decisions regarding career paths are made much earlier, between the ages of 11 to 17 (Adya & Kaiser 2005), yet in Australia, there have been only a few studies which investigate career and subject choices made during primary and high school years (Clayton et al. 2009).

While young people seem to have a positive attitude towards technology, and find computers and apps "cool", this response does not always manifest itself in career choice (Adya & Kaiser 2005). It is believed that many young girls in high school will already have decided against technology and may not have even considered that game development is even a possible career choice (Adya & Kaiser 2005; Fullerton et al. 2008). And although playing games is perceived as fun, game programming is perceived as a solitary, difficult, boring and non-creative pursuit which offers no interaction with fellow workers (Tapia et al. 2007; Carmichael 2008). Not surprisingly, female high school students are far from interested in choosing to enrol in computing subjects. Consequently, although girls have the ability (Tapia et al. 2007), they lack interest because they feel that once they obtain a tertiary computer science degree that they will be stuck in a cubicle writing code all day, with very little, if any human interaction (Verbick 2002).

Another reason young women are not found 'hanging out in the computer lab or joining campus computer clubs is the seeming awareness that programming is a "male" domain' (Verbick 2002, p. 243). This perception is further reinforced by images of men in computer and software ads, computer salespeople all being male, and male characters dominating computer games (Chaika 1995; Verbick 2002; Sarkessian 2013). Since these areas are perceived as belonging to males, young girls are afraid of being stereotyped as a 'nerd' (Verbick 2002, p. 242).

2.6.1 Gender roles & stereotyping

Perceptions of the range of career options, expectations of success, and subsequently on the selection of long term goals can be impacted by gender and activity stereotyping (Quesenberry & Trauth 2007).

More than half a million people around the world have taken the Harvard University *Stereotype Implicit Association Test*[4], which measures the 'strength to which a person holds a particular societal stereotype' (Nosek et al. 2002, p. 101). It concludes that more than 70% of people who take the test associate 'male' with science and 'female' with the arts. These beliefs which we all grow up with, are based on structural and social influences we get from our parents, teachers, peers, and career advisors which all shape how girl perceives their role in society (Adya & Kaiser 2005). For both sexes, gender

[4] https://implicit.harvard.edu

roles have expectations about how one should think, act and feel, which when applied to career choices can limit options for both males and females depriving industry of talent (Clayton et al. 2009; Geneve et al. 2008). This role stereotyping crosses into education, contributing to gender segregation, making girls more prone to consider careers in the humanities and social sciences in favour of IT and engineering (Australian Government 2013c). And while parents and teachers may encourage girls to look outside of traditional careers, beliefs about role-appropriate behaviour for women, often restricts career choices, as role models may also inadvertently reinforce perceptions about stereotypical careers based on gender that society imposes (Adya & Kaiser 2005).

2.6.2 Peer and parental influences

Embedded stereotypical attitudes play a large role in how family and friends influence; both encouraging and discouraging young girls from exploring careers in male-dominated fields like game development (Australian Government 2013c). Students with parents who have tertiary qualifications manage to defy gender stereotyping, and conversely, parents with lower levels of education are more likely to reinforce them (Adya & Kaiser 2005).

For girls, peers seem to have little impact on career choices; their influence on each other during teenage years tends more towards behaviour, fashion styles, and attitudes (Adya & Kaiser 2005). During adolescence though, the effect that boys have on girls is often observed to affect how females see themselves, their classroom experiences, and self-efficacy with computers and goals rather than influencing careers. Surprisingly, male peers have no significant influence on girls' choices of technological careers (Clayton et al. 2009). However, older male siblings often influence their younger sisters into masculine careers (Adya & Kaiser 2005; Tapia et al. 2007).

2.6.3 Teachers & Career Advisors

School teachers influence students with their gender stereotyping of roles and choices through classroom interactions, by giving the impression that boys are naturally gifted with computers compared to girls (Adya & Kaiser 2005).

Despite the fact that less than a third of girls receive support from career counsellors, when they do, areas such as maths, science and engineering are usually put forward as viable career options, yet IT, and in particular game development are not at all promoted in high school (von Hellens, Nielsen & Trauth 2001). Both primary and high

school teachers, as well as career advisors feel much more comfortable in recommending girls to pursue traditional fields. This is thought to be because they do not have adequate background and lack awareness of such career paths (Adya & Kaiser 2005; Prescott & Bogg 2013a) and that teachers need educating first about giving gender-neutral advice about the various career options available (Teague 1996; Adya & Kaiser 2005).

2.6.4 Lack of role models

No-one doubts that positive role models play an extremely important role for females looking to pursue a career in games (VonHellens et al. 2001; Haines 2004; Geneve et al. 2008; Chao 2010), as they 'ameliorate the pervasive impact of negative stereotypes' (Prescott & Bogg 2013b). Enderton (2003) suggests encouraging girls to have role models as early as primary school, as once they reach their teens, role models for girls often promote lifestyle and social behaviour based around music, movies and sport (Adya & Kaiser 2005), whereas, career-choice role models are usually family members and teachers.

In 'intact' family structures, that is, where there are one female, and one male parent, strong father figures positively influence a daughters' choice of technology careers. Whereas girls are more likely to cite their mothers as role models in same sex parent or single parent families (Mannis 1999).

It seems that attending an all-girls school can provide more positive role-models than co-ed schools (Clayton et al. 2009), though it has often been seen as a disadvantage as far as there being a lack of 'boys' subjects' available for girls to explore (VonHellens et al. 2001).

2.6.5 Confidence

Confidence, or lack thereof for girls in their abilities can have in insidious effect. The perception for most girls about what they are good at is rarely the reality. Compared to males, females underrate their technical capabilities, whilst males are much more confident, though this confidence is often inflated (von Hellens, Nielsen & Trauth 2001).

Where girls dislike failure at any level, they are more prepared to spend extended time at the computer trying to solve difficult problems (Clayton et al. 2009). For males though, when it comes to coding prowess, studies have shown that at university,

because of deadlines and time constraints placed on students, males widely believe that speed, rather than quality of code is a measure of ability, which is reinforced by teachers (Irani 2004). This disparity is emphasised more when women find themselves in the minority where,

> Establishing an identity of competence becomes critical to defining a place in the CS culture and establishing legitimacy. Social factors such as gendered self-presentation and communication, rather than objective measures of ability, plays a large role in developing confidence (Irani 2004, p. 195)

Because of the higher proportion of males in IT courses at university this is thought to contribute greatly to unease that women experience to the point that they drop out of studies (von Hellens, Nielsen & Trauth 2001). Female students also commented that 'they couldn't find other girls to work with and to relate to' (VonHellens et al. 2001, p. 118), thus receiving support and validation whilst bolstering confidence increases a girl's motivation to persevere and stick-it-out (Ely et al. 2011).

2.6.6 Girls use technology differently

Boys and girls have very different views on why and how to use a computer. Boys often consider computers and technology as a source of power (Verbick 2002) and are more likely to see them as playful, recreational toys (Chaika 1995). Conversely, girls are inclined to view computers as a tool to achieve an end result, such as writing papers, creating presentations, and doing research for their classes (Chaika 1995; Verbick 2002). At university, men can be found programming and trying out new applications just for the fun of it, whereas if a female is in a computer lab, it is more likely she is there to do work, complete a task or assignment (Verbick 2002, p. 242). However, where women are more exposed to collaborative assignments and play, they are more likely to choose IT as a career (Adya & Kaiser 2005).

2.6.7 Developing girls' interest in computers & game development

In response to the declining enrolment of women in Computer Science, several articles (El-Nasr et al. 2007; Carmichael 2008; Hammer 2010a) explore the links between creating games, gaining technology skills and successful student performance in computer class (Tapia et al. 2007), which usually translates into increased interest in this area and subsequently increased enrolments at university level.
Through action research, several after-school workshops, and conferences, namely;

Gaming for Girls (Tapia et al. 2007), *Computer Science and Games: Not just for boys!* (Carmichael 2008), the *Games2Girls* project (Hammer 2010a), *CyberTech I* (Gallivan et al. 2006), *Computer Club for Girls* (Fuller et al. 2013), and the *Technology takes you Anywhere* programme (Clayton et al. 2012), were developed for self-selected middle and high school girls. Each of the courses set out to teach a mixture of introductory computer science, game design, human computer interaction, usability, computer graphics and artificial intelligence (Groover 2009). Additionally, at some of these workshops, to give girls a better understanding of the industry, they also invited successful women from both IT and the games industry to give talks (Carmichael 2008).

The goal of these workshops was to promote interest for girls, and have them take with them a knowledge of computers and the motivation to want to learn more (Carmichael 2008), whilst providing an environment in which being interested in computers, programming, and games was both normal and natural (Tapia et al. 2007).

By showing these girls what the field was about and having them know after completing the course that they were in fact, capable of understanding it, perhaps then girls might consider taking related subjects later on in high school or university (Carmichael 2008). There were several barriers that had been anticipated which required consideration up-front when designing these courses. Issues included how to overcome cultural influences, socialisation, and the girls' reaction to games themselves. It was important that the concepts that were taught appealed to girls, whilst dispelling any negative stereotypes (Carmichael 2008). Taking this into consideration they also needed to make sure that the subject seemed '"cool" rather than nerdy or boring' (Carmichael 2008, p. 108). Also, because girls have a tendency to view things from the user's perspective when thinking about technology, this element needed to be incorporated to ensure that the introduction to CS focussed more on 'what it can *do* rather than what it *is*' (Carmichael 2008, p. 108).

Although not definitive, upon completion all courses received positive feedback from most of the girls and their parents. This was especially so with regard to self-efficacy and the use of computers, with one of the girls commenting that they liked that the courses were *girls-only* 'because there were no boys there who knew everything about computers and made girls feel dumb' (Carmichael 2008, p. 109). Studies recommended that if girls are to benefit from the same fast-tracking aspects into IT that playing games offers boys then on-ramps must be built for girls so that they too can fully engage (Tapia

et al. 2007; Carmichael 2008).

2.7 Recruiting and retaining

To date, there have been no other conclusive studies conducted within Australia that explains why or how women are influenced to pursue or avoid careers in either IT or digital games. It has been speculated though in studies abroad that it could be due to a variety of reasons.

2.7.1 Barriers that make entry to the digital games industry unattractive to women

Lack of information about industry

Many young women are unaware that there are career paths into creating digital games for a living. If they do, they have no idea what types of positions might be on offer (Fullerton et al. 2008; Kafai et al. 2008). According to the chairwoman of the steering committee of non-profit *Women in Games International* (WIGI), Sheri Graner-Ray, many women will not have considered the game industry as a possible career choice simply because of the lack of credible information about roles available within the industry. It simply is not on their list when they begin a job search (Graner-Ray 2004). In a report on the DGI in the UK, when women who worked in the industry were asked, they said that finding ways of getting women interested and aware of the industry was deemed more important than improving working conditions (Haines 2004, p. 15), presumably because they believed that working conditions were improving, but that the visibility of the industry was not.

Making games is not a 'real job'

Most computer science graduates aspire to a respectable and professional career within IT. In contrast, the perception of working in the digital games industry has been compared to that of an aspiring actor trying to break into Hollywood, where people are often advised to 'Pay your bills with a *real job*, and work on games as a side project.' (Penny Arcade 2013, p. 1). Although the skills required may be similar with IT and digital games, and while the games industry itself may sound fun and glamorous, it is not perceived as a professional, long-term career with stability or security (Everiss 2009). Even a seven- year veteran of the digital games industry, from Melbourne, in an interview regarding the downturn caused by the GFC, remarked how in 2009 he was forced to "take a job in the real world"(Australian Research Council Centre of Excellence

2011, p. 20), suggesting that even industry veterans are not totally convinced that working in digital games qualifies as a 'proper' career.

Work culture stereotypes

Even with an education in IT, relatively few women consider and apply for roles within the digital games industry. Part of the reason is believed to be the negative perception of the industry (Raja 2012; Hamilton 2012; Bort 2013; Brightman 2013).

Digital games being a male-dominated industry is recognised as having a masculine culture which is perceived to be non-inclusive, with a higher tolerance of behaviour that could be considered sexual harassment, discrimination, male humour and patronising behaviour (Tapia 2006; Australian Government 2013c; Hills 2013; Geneve 2013) leading to a perception that jobs within game companies would be a challenge at every stage of a woman's career. In an online interview discussing the so-called, *frat-boy* culture in the games industry, co-founder of, and game developer at the Cambridge-based Green Door Labs, Marleigh Norton remarked, 'If you are a woman in the industry, there are all these little signals that you are not part of the club, that this is not your tribe' (Burrows 2013, p. 1).

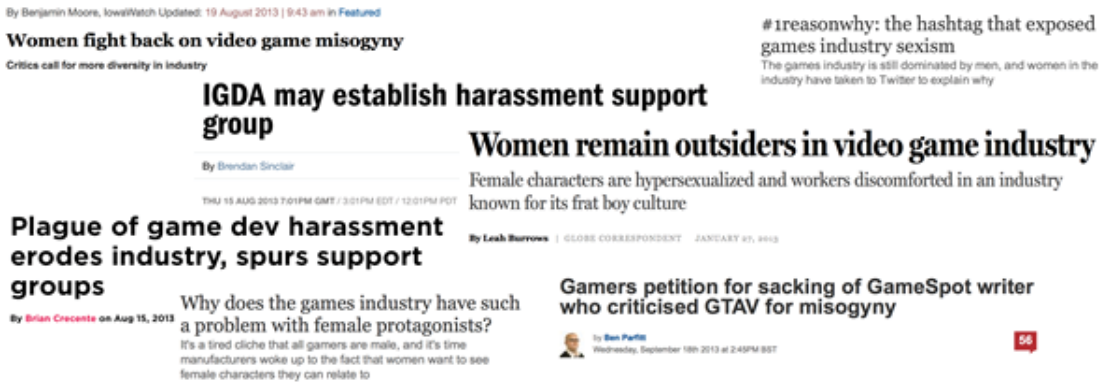


Figure 11 – Collection of website headlines about negative game industry culture - 2012-2013

Comments regarding the treatment of women working in games, playing games, and attending industry events, have increased over the past 12 months, with dozens of online articles on the topic being published (Refer Figure 11). It escalated in November 2012, when Luke Crane a game designer asked on Twitter why there as so few 'lady

game creators' (Crane 2012). Responses spawned the hashtag *#1reasonwhy*, and a huge reaction from the public, both positive and negative (Raja 2012).

From how women characters are negatively portrayed in games (Parmar 2013; Sarkessian 2013); how women game players frequently receive hateful comments and threats in-game for playing games that are 'meant for men only' (Deraney 2012, p. 1), to women being groped and sexually harassed at game developer conferences (Hamilton 2012; Burrows 2013), industry events exhibiting topless women and blatant misogyny (Pham 2008; Moore 2013; Grayson 2013), hateful backlashes from players asking for female game reviewers to be sacked after saying that GTA V is misogynistic (Parfitt 2013), to women developers being told that 'they should go and make their own games elsewhere instead of trying to work in the existing industry' (Hamilton 2012, p. 1).

Games industry veteran, Brenda Brathwaite (now Romero), criticised how some game company recruitment ads 'scream fraternity' (Pham 2008, p. 1), and how some have even thrown recruitment parties with strippers, reinforcing the perception that women need not apply. Granted, most of these reports never make it into the mainstream media, so it is hardly going to dissuade the average female from considering games as a career option. However, those women who *do* keep up-to-date with what's happening are usually gamers, and, are also more likely to be interested in working in the industry, so this negativity from all sides is far from encouraging women who may want to choose game development as their career path.

How women are portrayed in games

The male perception is that the DGI is a 'glamor industry' (Graner-Ray 2004) and when digital game companies advertise for positions, they usually receive hundreds of résumés, but usually only a handful from female applicants. Like their male counterparts, women want to make games that they themselves would want to play (Haines 2004), so naturally they want to work for companies that create the types of games they too would enjoy. Game titles that contain barriers for females do more than just alienate the female audience, they also convey an attitude toward women in general, whether it is true of the company or not (Graner-Ray 2004). Women may be discouraged from the game industry because of the anti-female bias in popular games (Pratt, 2007), and how women are portrayed negatively as depicted in *Tropes vs Women* (Sarkessian 2013), usually weaker, shown as victims or prizes (Denner et al. 2005), or

else are depicted as unacceptably hyper-sexualised figures (Kerr 2002; Agosto 2004; Haines 2004; Sarkessian 2013; Burrows 2013).

Figure 12 - Anita Sarkessian's series on Tropes -v- Women

If game developers treat female characters this way in their titles, then it does not take much imagination to assume this is how they might treat female employees. If a company's titles are inherently unattractive to female players, then it is very unlikely that females will consider wanting to work there (Fullerton et al. 2008; Kafai et al. 2008). Fullerton believes more women would enter the industry 'if there were more games on the market to inspire them' (Pratt 2007).

You need to be a hard core gamer

Even when women are aware of the industry, one of the first things that comes to mind about the DGI for outsiders is that to work there you have to be a hard-core gamer (Cassell & Jenkins 1998). For anyone without tertiary qualifications, the primary point of entry to the game industry has traditionally been to do an internship as a play tester which generally requires that you be a hard-core gamer (Fullerton et al. 2008). As Tracy Fullerton explained in an interview with EDGE magazine at the Game Developer's Conference, some people believe 'if you're not dedicated to hard-core games, you're not a gamer… That leads some aspiring female designers to doubt themselves because they prefer so-called "casual" games, not Gears of War or Halo' (EDGE 2009, p. 1).

2.7.2 Why the industry cannot retain women

Working conditions do not appeal to women

Putting in long hours, known as *crunch time* (Wikipedia 2013) is that 'frenzied period of development right before a game gets shipped to stores' (Pham 2008, p. 1). Crunch has almost become a requirement and accepted practice in many digital game companies which adopt a '"coke and pizza culture" where staff are "locked up" and have fast food delivered, in order to complete projects' (VonHellens et al. 2001, p. 118), where employees are expected to be willing to work long hours to meet deadlines. When crunch occurs over a long period, towards the end of a project productivity can be severely impacted and there are diminishing returns when employees are forced to work in excess of what they are able to tolerate both physically and mentally (Prescott & Bogg 2013c), not to mention that it is often unpaid (Everiss 2009), as was widely known to have happen at Team Bondi's studio in Sydney during the development of *L.A. Noire* which was released in 2011 (Handrahan 2011).

Allen (2006) says that crunch exists because game development lacks optimized processes capable of achieving the aggressive milestones demanded by the industry production cycle (Allen 2006, p. 35). Many companies argue that because game developers are passionate, that passion can only manifest itself in 'relentless schedules and minimal compensation' (Allen 2006, p. 35) which normalise the culture of long hours (Prescott & Bogg 2013c). Where men seem to thrive on this kind of work environment, women find it draining (Consalvo 2008; Graner-Ray 2004).

More often than not, because women have the responsibility of both rearing children and maintaining a household, having children is regarded as a constraint (Graner-Ray 2004). According to an Australian workforce study, 'women were more than twice as likely as their male counterparts to find lack of workplace flexibility and long working hours very demotivating' (Australian Government 2013a, p. 91). A year ago, Telstra introduced an initiative, which enables all jobs to be done flexibly. Whilst there has been no noticeable change in productivity, the number of women who have applied has increased by 13% (Smith 2013).

The combination of personal responsibilities and long work hours becomes stressful and tiring for most women, which leads many females who are passionate about

working in the industry to decide not to have children (Geneve 2013), eliminating the need for flexible scheduling and shorter hours (Consalvo 2008).

Pay disparity

While there have been no recent figures published specifically for the Australian digital games industry, it is widely believed that wages paid by Australian game companies are still lower than in other countries resulting in a 'brain drain of Australian talent, particularly to the United States' (Australian Research Council Centre of Excellence 2011, p. 30).

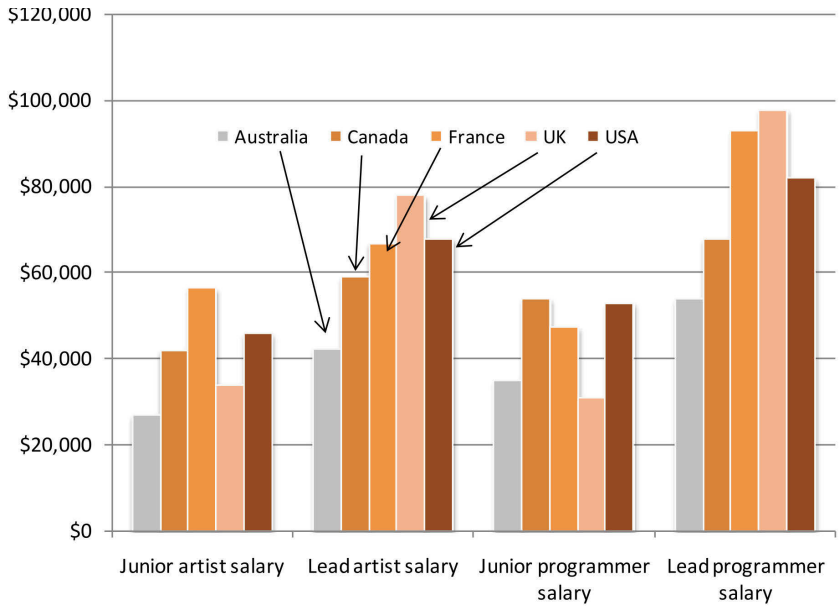


Figure 13 - Salaries of digital games workers (US$) by seniority, and by country, 2007

More recently, the *Game Developer Magazine* conducted an international survey of game developers, broken down by gender and role, which was published in an article, *The 2013 Game Developer Gender Wage Gap* (Baribeau 2013). Apart from female programmers, women are under-paid in every other job role within the game development pipeline compared to their male counterparts by up to 22% (Game Developer Magazine 2013). (Refer graphs in Figure 14)

Not withstanding claims that game developers are paid less than regular IT jobs (Haines 2004; Everiss 2009), Australian studies have shown that there are still significant pay disparities between men and women working in the IT industry (Australian Government 2013a).

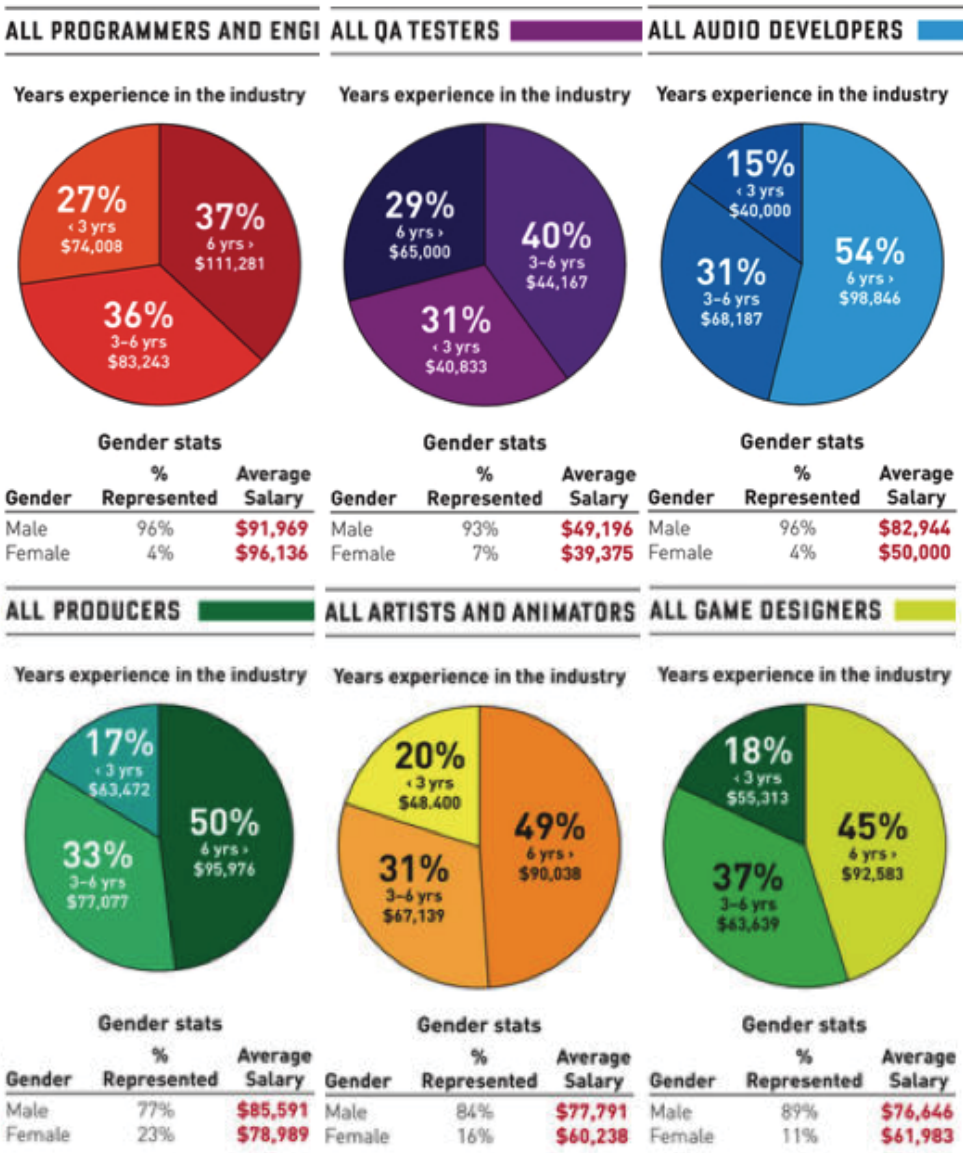


Figure 14 - The 12th Annual GD magazine Salary Survey

2.8 Summary of literature review

The issues covered in this literature review appear to be interconnected, in a reinforcing "chicken and egg" cycle (See Figure 15). There is a definite gender imbalance in the digital game industry, which can be attributed to less women seeking positions, because of real or perceived barriers to entry (Hill 2007). This is further impacted by the "pipeline" issue of young women choosing not to enrol in IT degrees at university. However, it has been shown that career choices are made years beforehand in middle and early high school, and are understood to be due to cultural and social influences that steer girls away from technology.

Research has confirmed that there is a connection between playing games and increased skills and self-efficacy in computer use. Initiatives that have been explored in the USA include running all-girl game development workshops, which endeavour to inform, motivate, and encourage girls in the hope that they may consider pursuing a career in digital games in the future. However, it seems that girls are just not as interested as boys are in computers or playing games. The reason young females do not find games in general appealing, has been attributed to the fact that men predominantly create games.

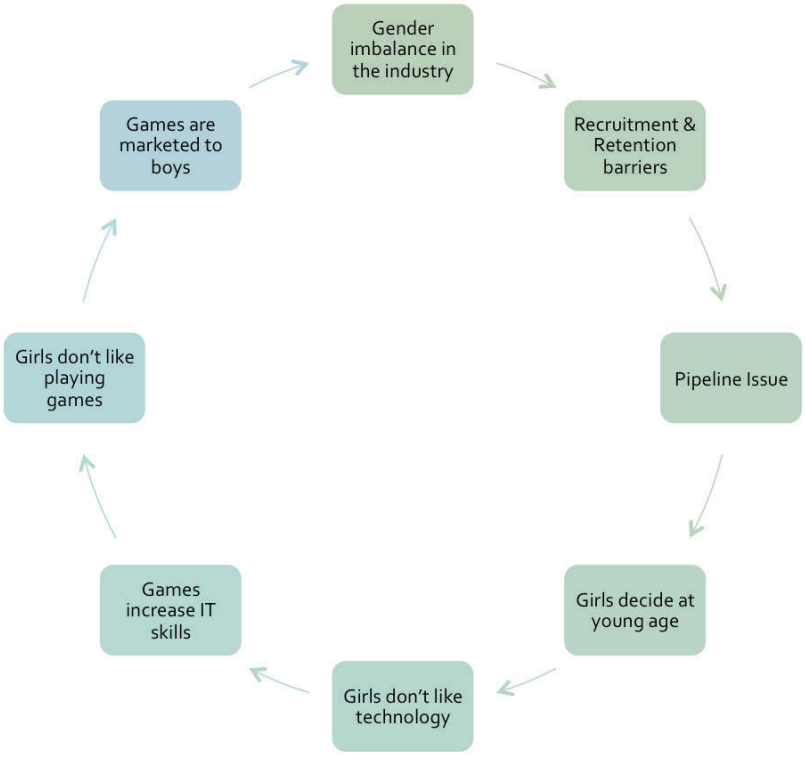


Figure 15 - The 'chicken & egg' cycle of the low participation of female in the DGI

2.8.1 Gap analysis of literature

With a lack of research undertaken in this area within Australia, a high proportion of the research data in the literature describes experiences from either the USA, or the UK. This information was used in preference to data from other countries as Australia is more closely aligned culturally to the USA and UK than say non-English speaking countries in Europe, and non-western countries such as Japan or China.

Within the past five years only one research article was found to touch on the subject of the participation of women in the Australian digital *content* industry, which happens to include games, (Geneve 2013), and although made several good points, was largely about female web developers rather than women working in the Australian DGI.

Much of the empirical research conducted in this literature review was not specifically undertaken within the digital games industry - although several discussed initiatives involved girls creating games as a means to increasing IT skills in young women. Also in many instances parallels were drawn regarding the similarity of the IT industry as a whole, and the digital games industry (Tapia et al. 2007; Pratt 2007; Prescott & Bogg 2013d).

Other than data collected by the ABS in 2012 (Australian Bureau of Statistics 2013), there are no other statistically valid data available in Australia about women who work in the digital games industry. Additionally these statistics do not provide a meaningful picture of the role that women play in the industry. The data although broken down by gender and by role, it is not broken down by both.

There are however, many insightful, though non-peer-reviewed articles available that contain a lot of anecdotal evidence mentioned in conversations, interviews and from online magazines. Even so, some of this information may be of dubious quality as there have been several instances of incorrect or conflicting information. For example, a report found on the largely credible digital game news website, Kotaku, reported different statistics even within the same article 'These businesses employed over 1,400 people …8,500 Australians are directly employed in the video game industry in 2007' (Booker 2008, p. 1). (Refer Figure 16)

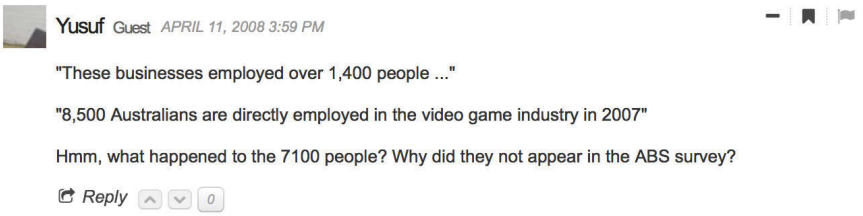


Figure 16 - Reader comment from Kotaku article about reported ABS statistics

3 RESEARCH METHODOLOGY

3.1 Qualitative Research

Where quantitative research is about numbers and collecting data using objective methods, qualitative research on the other hand, is an investigative, participant / observer-lead method.

The purpose of qualitative research is to understand people's values, viewpoints, and interpretations, based on their reality, which are subjective by nature. Unlike quantitative analysis, it is a holistic approach that seeks to discover through rich and deep data, a complete picture of the given situation (Key 1997). With the use of open-ended questions, emphasis is put on identifying patterns, phenomena and relationships, and the importance of how the interactions and comparisons between them are used in making predictions.

3.2 A Mixed Method Grounded Theory approach

A Mixed-Method, Grounded Theory approach was chosen as the preferred methodology to develop a theory that might help explain whether women working in the Australian digital games industry are in fact underrepresented. Put simply, Mixed Methods allows for both quantitative and qualitative data analysis with the inductive benefits that Grounded Theory allows. This enables the researcher to explore, use their intuition, follow leads, and attempt to try to identify and reveal unique patterns and occurrences within a natural setting.

3.2.1 Mixed Methods

Mixed Methods is an emerging method in the social sciences, which combines both statistical trends and stories that study human and social problems. It brings together both 'pre-determined' (quantitative) and 'emerging' (qualitative) methods, allowing for a more complete study of the research problem than by using just one method alone.

Qualitative evidence from interviews and open-ended questions is interpreted, analysed and combined with data from closed-ended surveys, which helps to supplement or augment the statistical evidence giving a greater understanding of the situation. Variation in data leads to greater validity and ensures no gaps in the data collected and that any pre-existing biases or assumptions are less likely to occur.

3.2.2 Grounded Theory

Within the area of interpretive and qualitative research methods, what differentiates Grounded Theory from other methods is that it is known primarily for its inductive approach. That is, the data helps to develop and generate a theory, rather than the researcher starting out with a hypothesis that is then tested and proven or rejected. With Grounded Theory, it is not necessary to determine a hypothesis before collecting data. All that is required to start it to merely know what the 'substantive area' is.

Models are grounded in empirical observations, and as the data is collected, and interpretations of that data accumulate, a theory will gradually develop, providing insight into areas that may be unknown in the beginning, opening up other areas for exploration.

Grounded Theory encourages discovery of phenomena, enabling freedom to explore the research area by uncovering patterns and contradictions, allowing issues to gradually emerge so that the final fleshed-out theory ultimately provides the best possible fit for the situation.

Although the process used with Grounded Theory contradicts the traditional way research is often thought to be carried out – that is, start with a hypothesis first, and then collect the data, Grounded Theory still provides a systematic, rigorous and detailed method of analysis. However, in order to achieve this, it is necessary first to be very familiar with the subject matter, the subjects, and the cultural context of the research, suggesting that the researcher enter the field at a very early stage to start collecting data in whatever forms possible.

It also assumes that the researcher becomes well acquainted with the literature and engages in reflective reading throughout the study, continually searching for evidence that contradicts any emerging theories, allowing for continual refinement of findings as they develop.

It is not important to complete a literature review up-front as the initial literature may end up being so irrelevant to the final outcome resulting in having to go to an entirely different literature. Instead, start with a core concept, collect some data, review, compare, contrast and integrate it into the current literature, but be open to the fact that what you have already reviewed may have nothing to do with what you eventually get

down to studying and that there is still a risk that even after collecting and analysing data, a substantial or significant theory still may not be found.

3.3 Methodological Considerations

In the planning of the research for this thesis, various social research methodologies were investigated and considered, including Feminist Methodology, Action Research, and Grounded Theory. Individually qualitative in their approach each is suitable for studying topics of a social nature, and has their own strengths and weaknesses respectively, which will be discussed.

3.3.1 Feminist Methodology

Although this study is concerned with women's participation in the digital games industry, it is not defined as 'feminist research' per se. The difference between "feminist" and "non-feminist research" lies in the former explicitly focusing on the emancipation and transformation of women. As this research is looking at *why* women are underrepresented in digital games, rather than *how* to change the women themselves - not their situation, this approach was dismissed in favour of a more suitable methodology.

3.3.2 Action Research

Action research is a reflective process of gradual and measured problem solving which is brought about through discussion, decision and action by ordinary people led by the researcher working alongside subjects in a team to improve the way a community addresses certain issues to solve problems they have in common. This approach may have been the best fit had the research been conducted over a longer period, however, because of time constraints and the difficulty of gaining on-going and prolonged access to participants, this method was deemed not suitable for this study.

4 : RESEARCH DESIGN & APPROACH

In order to locate appropriate respondents, the process of collecting data for this research was broken down into four (4) distinct phases.

Not all businesses operating within the Australian DGI, actually develop digital games, and not all women who work for game development companies actually create games, so the scope needed to start out broad and become more granular until the core community of women game developers could be identified.

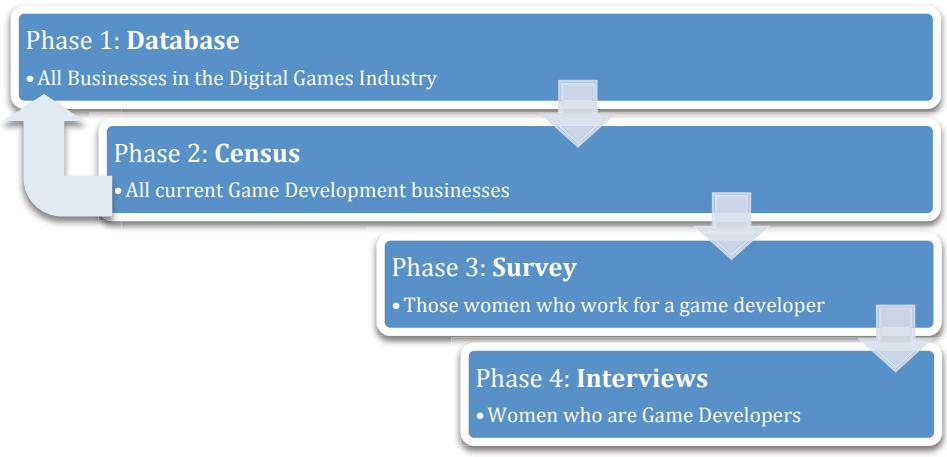


Figure 17 - Four phases of data collection

After speaking with local game developers many concurred that the industry had changed significantly since the last Australian Bureau of Statistics (ABS) survey was carried out in June 2012. For instance, many studios have since closed, and many more have opened in the past 15 months. Therefore, in order to locate female game developers it would be necessary first to try to obtain an understanding of where the industry currently stands. Moreover, several companies that once created digital games (as mentioned in 2.2.1), no longer fitted within the category of 'game developer'. Similarly, there are a number of companies within the Australian DGI that do not develop games. Rather they offer support services such as recruitment, marketing, audio, video, or publishing, and these had to be eliminated.

The initial phase involved compiling a database of all businesses within the Australian DGI. From the database, Phase 2 entailed emailing a census form individually to every business across the country. This phase was instrumental in helping to identify

companies that actually develop games and have female employees. From there a list of potential candidates to interview later on was drawn up. Phase 3 comprised of sending out a survey to 63 females who had been identified during the second phase. This was necessary in order to determine which of those women who work as game developers, might be suitable to participate in a cross-sectional study involving an interview during the forth and final phase. A cross-sectional study involves observations of a cross-section of the population made at one point in time, typically with the aim of understanding causal processes that occur over time (Babbie 2011).

4.1 Phase 1 - Compile a database of Australian digital game companies

Australia has two main professional digital game industry bodies: the *International Game Developers Association* (IGDA), and the *Game Developers Association of Austr*alia (GDAA), neither of which requires compulsory membership for game companies within Australia. Although both of these bodies could have supplied some of the data required for this study, there is however, no one single official source within Australia that has an up-to-date list of every active digital game company nationwide. The most recent data collected by the Australian Bureau of Statistics (ABS) was from June 2012.

> *"The census of digital game developers included all Australian businesses that generated income predominantly from the development of digital games for a range of formats (major consoles, handheld consoles, personal computers and mobile phones)".* (Australian Bureau of Statistics 2013)

Although the ABS data from both the 2007 (Refer Figure 18) and 2012 (Refer Figure 19) surveys contained separate breakdowns of the total number of employees by *occupation,* and by *sex*, neither study presented combined breakdowns of *occupations by sex*. That is, it is not clear whether more men or more women perform technical or creative roles in the actual production of games, or conversely, work in 'non-production', administrative, or sales & marketing positions.

Australian Bureau of Statistics

85150DO001_200607 Digital Game Development Services, Australia, 2006-07

Released at 11:30 am (Canberra time) Tues 8 Apr 2008

Table 5 MAIN ACTIVITY OF PERSONS EMPLOYED

	Australian resident individuals		Non-resident individuals		Total	
	no.	%	no.	%	no.	%
Managerial/administrative/clerical	206	15.3	6	6.9	212	14.8
Designers	125	9.3	11	12.6	136	9.5
Artists and animators	455	33.9	36	41.4	491	34.3
Programmers	387	28.8	30	34.5	417	29.1
Audio technicians					26	1.8
Technical support					33	2.3
Quality assurance					105	7.3
Other					11	0.8
Total	**1,344**	**100.0**	**87**	**100.0**	**1,431**	**100.0**

Figure 18 - ABS Digital Game Development Services Statistics 2007

Australian Bureau of Statistics

86790DO005_201112 Film, Television and Digital Games, Australia, 2011-12

Released at 11:30 am (Canberra time) Tues 18 Jun 2013

Table 3 CHARACTERISTICS OF EMPLOYMENT, Digital game developers

	Persons	Percentage of total employment at end June
	no.	%
Employment at end June	**581**	100.0
By type		
Working proprietors and partners	**29**	5.0
Salaried directors	**60**	10.4
Other employees		
Permanent full-time	**452**	77.8
Permanent part-time	**11**	2.0
Casual	**28**	4.8
Total	***492***	*84.6*
By sex		
Male	**530**	91.3
Female	**51**	8.7
By occupation		
General business operations	**123**	21.2
Executive producers, producers, line producers	**35**	6.0
Production staff		
Animation, computer generated imagery and visual effects technicians	**140**	24.1
Game designers	**76**	13.0
Computer programmers	**180**	31.0
Other	**27**	4.7
Total	***423***	*72.8*

Figure 19 - ABS Digital Game Development Services Statistics 2012

How initial data for the database was sourced

An online Google Fusion™ database was compiled explicitly for this study. It contains the names of Australian digital game companies. Data was collected from a variety of sources starting with lists obtained from previous ABS surveys, and from the IGDA and GDAA industry websites. From there, further information was sought from a variety of Australian game developer resource websites, such as; *Tsumea* http://www.tsumea.com, *Lets Make Games* http://www.letsmakegames.org and *GameDevMap* http://www.gamedevmap.com, each of which publish their own independent lists; though not always up-to-date. From there, further digital game companies were gleaned from game developer community group websites, such as Facebook and LinkedIn (Refer Figure 20).

SOURCES SOUGHT TO COLLECT NAMES OF GAME DEVELOPMENT STUDIOS as at 01.10.13		
COMMUNITY ONLINE GROUPS & MAILING LISTS	**Area Covered**	**No. of Members**
Facebook - IGDA Sydney	Sydney & NSW	1513
Facebook - Women in Games Australia	Australia-wide	127
Facebook - SA Game Makers Association	South Australia	196
Facebook - ARGGGH: Adelaide's Really Good Gathering of Game	Adelaide & South Australia	381
Facebook - Australian F2P Developers	Australia-wide	157
Facebook - Brisbane International Game Developers Association	Brisbane & Queensland	871
Facebook - IGDA Melbourne	Melbourne & Victoria	1547
Facebook - WA Game Studios Perth	Perth & Western Australia	12
Facebook - Looking for Game Developers (Australia)	Australia-wide	263
LinkedIn - Women in Games Australia Group	Australia-wide	53
LinkedIn - Australian Games Industry	Australia-wide	889
GAME DEVELOPER RESOURCE SITES		
Tsumea (http://tsumea.com/)	Australia-wide	
Let's Make Games (http://letsmakegames.org)	Perth & Western Australia	
GameDevMap (http://www.gamedevmap.com)	Australia-wide	

Figure 20 - Online social networking groups & mailing lists used to collate the initial database

A final list of all 356 companies in the database can be found at APPENDIX B - Phase 1 – Australian Digital Game Company Database*)*

Once all avenues were exhausted and the list of business names in the database was believed to be as complete as possible, each company's website was looked-up online and their contact email address, or a link to their website *Contact Us* form (where there was no email address available), or their *Facebook* company page, was noted and added to the database, along with any contact names. The cut-off date, in which no new entries were added to the database or changes made to existing records, was 1st November 2013, at which point a snapshot was taken of the data.

Beyond this thesis

Despite the fact that the database, which was constructed specifically for Phase 1 of this study, was not the central focus of this research, the data collected are still quite valuable to the Australian DGI.

Further refinement, review and analysis of the information will be carried out after this thesis has been submitted, and a summary of the findings will be made available to the Australian digital games industry and published on the games industry website, Tsumea (anticipated Q1 2014).

As data collected from all interviews and surveys were treated anonymously, any personally identifiable outliers will be removed from the data sample, if and where required before publishing.

4.2 Quantitative Survey Design Approach Considerations

As part of the process of ensuring rigor, the following considerations were made when designing both the Phase 2 Game Company Census and the Phase 3 Women Game Developer Survey.

4.2.1 Justification for conducting the census & surveys online

Australia is a vast country, and with most game developers geographically spread across the nation, albeit concentrated in the major capital cities in each state, gaining access to potential respondents could only be achieved effectively using online means. In addition, using an online survey:

- made it easier to send out invites to prospective participants, and to be able to keep track of who had been invited, who had not, and who to remind;

- made it simpler to collate, as the data did not need to be recorded & transcribed, but rather was collected and saved automatically into a spread-sheet making it easier to analyse;
- required less resources, was less time consuming and less expensive, and was virtually paperless;
- enabled those developers who are located remotely to be included;
- eliminated the bias of an interviewer;
- and with the women's survey, made it more likely for women to want to come forward by allowing them to fill out the initial survey anonymously online, in preference to approaching them directly. Alternatively, a focus group was considered, but trying to persuade women to give their opinions in front of a group of strangers may not have achieved the desired results. For this particular survey it was imperative that the participants were made as comfortable as possible in the hope that they would agree to participate in a follow-up interview.

4.2.2 Questionnaire construction

Striking the right balance between creating a short questionnaire and not obtaining enough quality data, and making it too long and having participants quit partway through, needs careful consideration. Studies have shown that 50% of respondents who choose to participate in self-administered surveys will quit because they become annoyed for a variety of reasons, including the survey taking longer than expected, asking sensitive questions, or asking questions that require work beyond what was expected when they started (Babbie 2011). Questionnaires that are too long can induce fatigue resulting in inaccurate answers. The census was timed to fit within the suggested 10-20 minute completion time (Baker 1999).

When designing self-administered surveys, questions at the beginning should be interesting enough to encourage participants to start, and "hopefully" complete the survey. Questions they might feel sensitive about, or are reluctant to answer should come later (Baker 1999). The rule of thumb is *general* to *specific* – that is, start with general demographic non-threatening questions such as location or year established and end with questions that are specific to the organisation such as staff numbers and breakdowns.

The order in which questions are posed are likely to affect responses. Respondents are more likely to answer non-threatening questions first (Babbie 2011). For instance, asking respondents to divulge the name of their company is an example of a question that might feel threatening, that is, by mentioning your company name, all information you enter after that would be associated with that company. At the beginning of a questionnaire the respondent has no idea what possible future questions might be asked and so may be unsure whether to proceed or not. Asking respondents for their company name at the beginning of the census was done on purpose so that they were made aware that the data being collected was specific to that company and not for the individual who was filling it in. With this in mind, the question was asked up-front, but was not made compulsory with the hope that respondents would continue.

Prior to the census survey being drawn up, several game company owners who had previously responded to the ABS census were approached by the researcher and asked which 'parts' specifically about a survey would they either refuse to answer on the grounds that they consider the information private, or else, skip sections because it was too tedious, or worse, where questions were made compulsory, concocted the answers. Several complained how long it took them to gather specific detailed data in June 2012, and how had it not been for the fact that it was a government department and they felt compelled to reply accurately, had they been given a choice they would not have wasted their time on such a time-consuming exercise.

One area in particular in the ABS survey, which drew criticism, was in breaking down the staff into roles. Because many studios nowadays are smaller, many employees work across multiple disciplines making it particularly difficult for them to quantify accurately – unless of course they know *why* the information is being sought. For the purpose of this census, respondents were asked simply whether staff worked in a role that contributed *to* the creation of games, or *not*. Similarly, the question of working proprietors and partners, and salaried directors was skipped entirely, as many had indicated previously that they do not consider themselves separate to 'Other employees'.

Questions were predictably grouped under the same subject in such a way to keep respondent thinking about the same material so that they were not confused or caught off-guard.

4.2.3 Risks and Limitations

Data integrity and spam avoidance

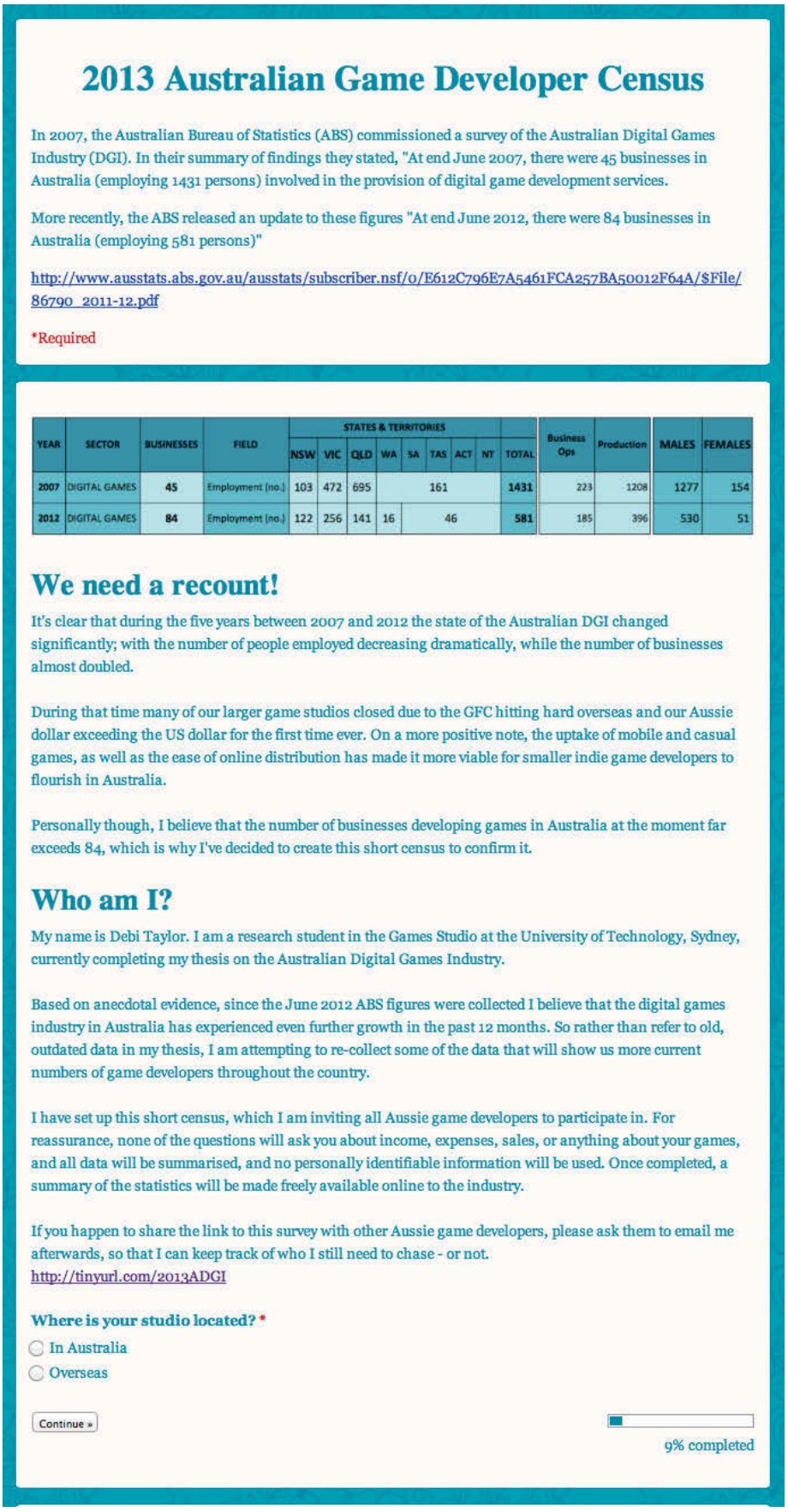
There is always a risk when hosting a survey online that it will be open to abuse. One way to cut this down is to supply each and every participant with a dedicated URL, but as the company census and the women's survey were being administered to a community, the chances of links being shared was high. So whilst the fact that this study was advertised widely in the hope of getting the word out to the industry, the link itself however, was not publically announced, in an attempt to confine respondents to only those who were invited.

Anonymous respondents

As the survey was available to be completed online anonymously, there may be cases where respondents completed it more than once, whether by accident, or because someone is trying to 'stack the data'. In an attempt to prevent this from happening, respondents were asked to email the researcher immediately after they had completed the survey, many of which did so within the hour. This helped identify duplicate records and enabled each company to be checked off the database list to ensure they were not sent a reminder later on. However this still could not guarantee that duplicate entries did not occur, but helped the researcher to identify easily, suspicious or duplicate entries. Several companies however admitted they had inadvertently submitted multiple entries. Subsequently the extra records were promptly removed from the database.

4.3 Phase 2 – Australian DGI company Census

Between 1st and 6th October 2013, each studio in the database was individually contacted by email, via their website Contact form, or by personal message via Facebook or LinkedIn, and told the reason the data was being collected. Each was given a URL link to the census survey (http://tinyurl.com/2013ADGI). The same introductory message from the email appeared on the first page of the survey in case respondents arrived at the survey without first reading the email (See Figure 21). As survey submissions were receive, the database was updated and company names checked off. Any company that did not respond within a week was continually sent reminders every five days until the end of the October. For those whose email bounced, reminders were sent via alternative methods.



2013 Australian Game Developer Census

In 2007, the Australian Bureau of Statistics (ABS) commissioned a survey of the Australian Digital Games Industry (DGI). In their summary of findings they stated, "At end June 2007, there were 45 businesses in Australia (employing 1431 persons) involved in the provision of digital game development services.

More recently, the ABS released an update to these figures "At end June 2012, there were 84 businesses in Australia (employing 581 persons)"

http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/E612C796E7A5461FCA257BA50012F64A/$File/86790_2011-12.pdf

*Required

YEAR	SECTOR	BUSINESSES	FIELD	STATES & TERRITORIES								TOTAL	Business Ops	Production	MALES	FEMALES
				NSW	VIC	QLD	WA	SA	TAS	ACT	NT					
2007	DIGITAL GAMES	45	Employment (no.)	103	472	695	161					1431	223	1208	1277	154
2012	DIGITAL GAMES	84	Employment (no.)	122	256	141	16	46				581	185	396	530	51

We need a recount!

It's clear that during the five years between 2007 and 2012 the state of the Australian DGI changed significantly; with the number of people employed decreasing dramatically, while the number of businesses almost doubled.

During that time many of our larger game studios closed due to the GFC hitting hard overseas and our Aussie dollar exceeding the US dollar for the first time ever. On a more positive note, the uptake of mobile and casual games, as well as the ease of online distribution has made it more viable for smaller indie game developers to flourish in Australia.

Personally though, I believe that the number of businesses developing games in Australia at the moment far exceeds 84, which is why I've decided to create this short census to confirm it.

Who am I?

My name is Debi Taylor. I am a research student in the Games Studio at the University of Technology, Sydney, currently completing my thesis on the Australian Digital Games Industry.

Based on anecdotal evidence, since the June 2012 ABS figures were collected I believe that the digital games industry in Australia has experienced even further growth in the past 12 months. So rather than refer to old, outdated data in my thesis, I am attempting to re-collect some of the data that will show us more current numbers of game developers throughout the country.

I have set up this short census, which I am inviting all Aussie game developers to participate in. For reassurance, none of the questions will ask you about income, expenses, sales, or anything about your games, and all data will be summarised, and no personally identifiable information will be used. Once completed, a summary of the statistics will be made freely available online to the industry.

If you happen to share the link to this survey with other Aussie game developers, please ask them to email me afterwards, so that I can keep track of who I still need to chase - or not.
http://tinyurl.com/2013ADGI

Where is your studio located? *

- ◯ In Australia
- ◯ Overseas

Continue »

9% completed

Figure 21 - Census introduction page

4.3.1 Encouraging participation

As the researcher is not a known or trusted individual within the ADGI, encouraging maximum participation across the country was crucial. To help publicise the Census, the timing of the rollout of the survey coincided with several industry events (Refer Figure 22) which were being held across the country, such as the Freeplay Independent Games Festival in Melbourne (25th – 27th September, 2013), the WA Games Showcase in Perth (5th October, 2013), iFest in Melbourne (12th October, 2013) and Games Connect: Asia Pacific (GCAP) in Melbourne (21st October – 23rd October), which allowed for an even broader reach of awareness within the community as many prominent companies attend these events.

Figure 22 - Industry events that coincided with the Australian DGI Census

Census Design

Using a standardised[5], closed-question survey created using Google FormsTM; the following data was requested from 356 game companies. Refer to ***APPENDIX C - Phase 2 - Census Form***.

[5] Data collected should be unaffected by whoever conducts an interview.

Dual-purpose of census

The census phase was essentially a means for the researcher to be able to locate females across the country working in the industry for the purpose of Phase 4 - the *Interview*.

However, sending out a census asking companies whether they employ women or not, would have been a waste of a rather time-consuming exercise. Therefore, for purposes beyond this thesis, the opportunity was taken to obtain additional demographic information that might be of value to the Australian DGI community.

Geographical Location

Although not central to this research, as a by-product, businesses and their related employment demographics were mapped by postcode to gain further insight into the industry's concentration across states and within urban regions, as there may be some significance to the location of studios. Subsidiary and branch offices based in different states were identified as separate entities to ensure a proper depiction of employment distribution.

4.3.2 Question flow & filtering

To avoid gathering irrelevant data, filtering was applied at the beginning of the survey. Respondents were asked whether their game studio was located in Australia, and whether they were currently operating, before proceeding to the main part of the survey. Those who responded, No, to both of these questions were automatically directed to the end of the survey. (Refer Figure 23)

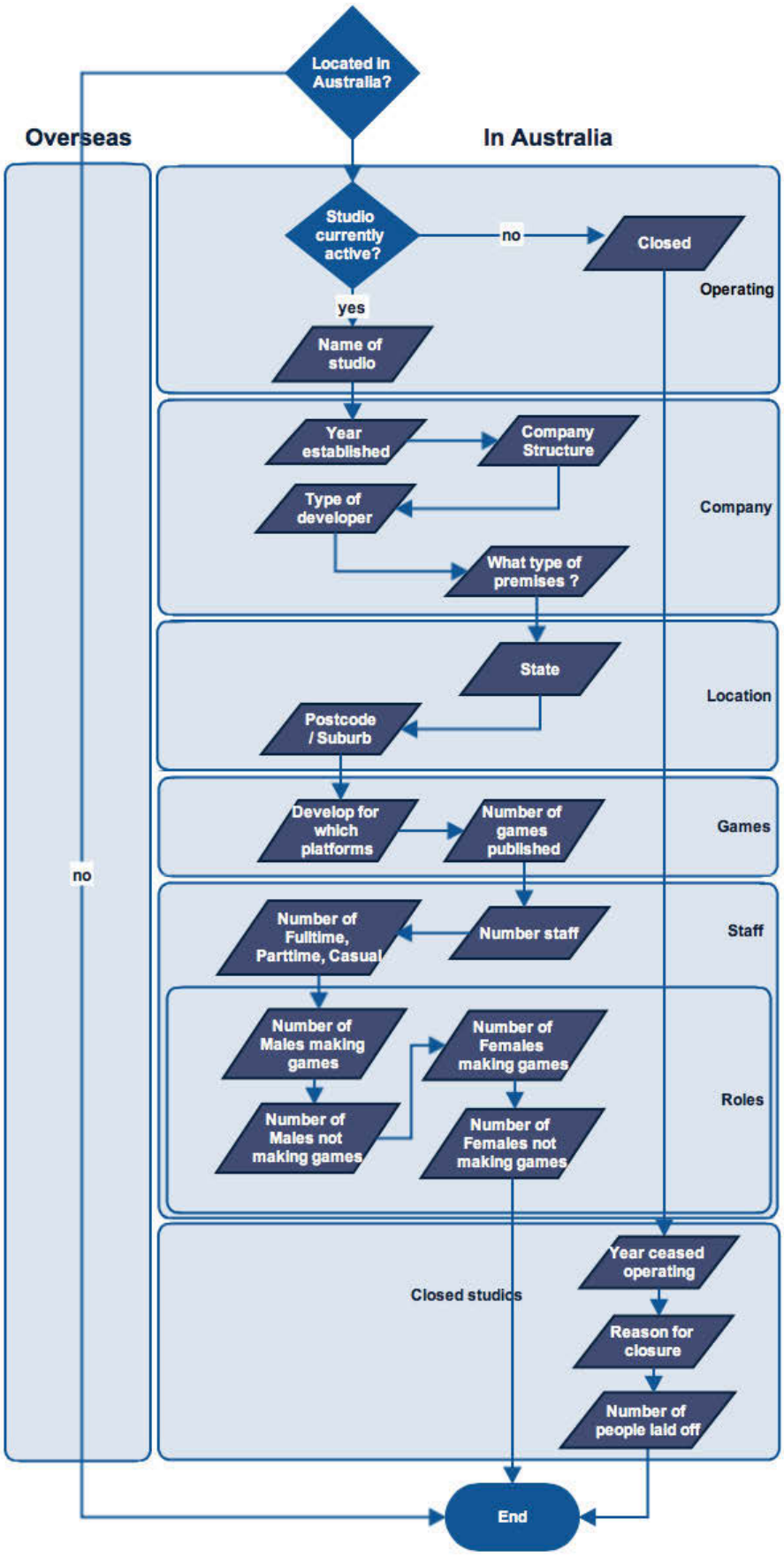


Figure 23 - Flowchart of Phase 2 Census questions

4.3.3 Question grouping and reasoning

Apart from the year established, type of premises, and the staff breakdown by role and gender, the questions in the census correlate to those asked in the ABS studies, conducted in 2007 and 2012. (Refer Figure 24)

Question	Reasoning
Company name	To assist in determining who still needed to be sent reminders, and to help detect duplicate entries.
Year the business was established	To confirm the assumed increase in new game companies during the very recent past.
Company organisational structure • Registered Public (Limited) • Registered Private (Pty. Limited) • Registered Business, Partnership, Sole trader • Not registered / no business structure	Expanded on the ABS model to include 'less traditional' and non-structured entities.
Type of game development company • 1st-party internal game development/publishing • 2nd-party game development studio owned by publisher (wholly or partially) • 3rd-party game development studio • Independent	As per the definition http://en.wikipedia.org/wiki/Video_game_developer#Types
Type of premises • Commercial • Co-Working Space • University Campus • Home Office • Café / Internet Cafe • Garage • Bedroom / Lounge room • Other	There's been an assumption with the rise of the indie studio that with it has come an increase in less traditional workspaces.
Geographical Location • State • City/Suburb/Postcode	For comparison with ABS surveys
Which devices they develop games for	For comparison with ABS surveys
Number of games published	For comparison with ABS surveys
Total number of staff	For comparison with ABS surveys
Breakdown of staff into Full-time, Part-time and Casual/ Freelance	For comparison with ABS surveys
Breakdown of staff numbers by both role and gender • Number of staff who contribute to making games (programming, graphics, design, audio) • Number of staff who do not contribute to making games (business / administration)	This data has never been available. Previous ABS has broken data down by gender and by role, but never by both.

Figure 24 - Census question list

At the end of the Phase 2 survey participants were asked if they would mind forwarding a link to the *Aussie Female Game Developers Survey* to any female game developers with in their company, or alternatively, ask women developers they know to contact the researcher direct via email, phone, or Facebook which resulted in more than 60 responses.

4.4 Phase 3 – Survey women working within the industry

As data came in from the game company survey, those companies that had reported having female game development staff were contacted direct via email, Facebook private messaging, LinkedIn and telephone and were invited to participate in the *Aussie Women Game Developers Survey*. This short, standardised, closed-question, survey created using a GoogleDoc form, was administered online at:
http://tinyurl.com/AussieWiG
(A copy of the survey form can be found under APPENDIX D - Phase 3 - WiG Survey Form*)*

Question Flow & Filtering

The purpose was first to obtain more accurate numbers of women, whilst at the same time filter out those women who, although work in the Australian digital games industry, may not necessarily contribute to the actual creation of digital games.

To avoid gathering irrelevant data, before proceeding to the main body of the survey, respondents were asked at the beginning whether they were female, whether they have worked in the Australian DGI, and then whether they have worked for a game development company. This was to eliminate any women who although may work within the industry, are employed in non-game development, for instance, marketing, publishing, creative support, or in education (as teachers of game development). (Refer Figure 25)

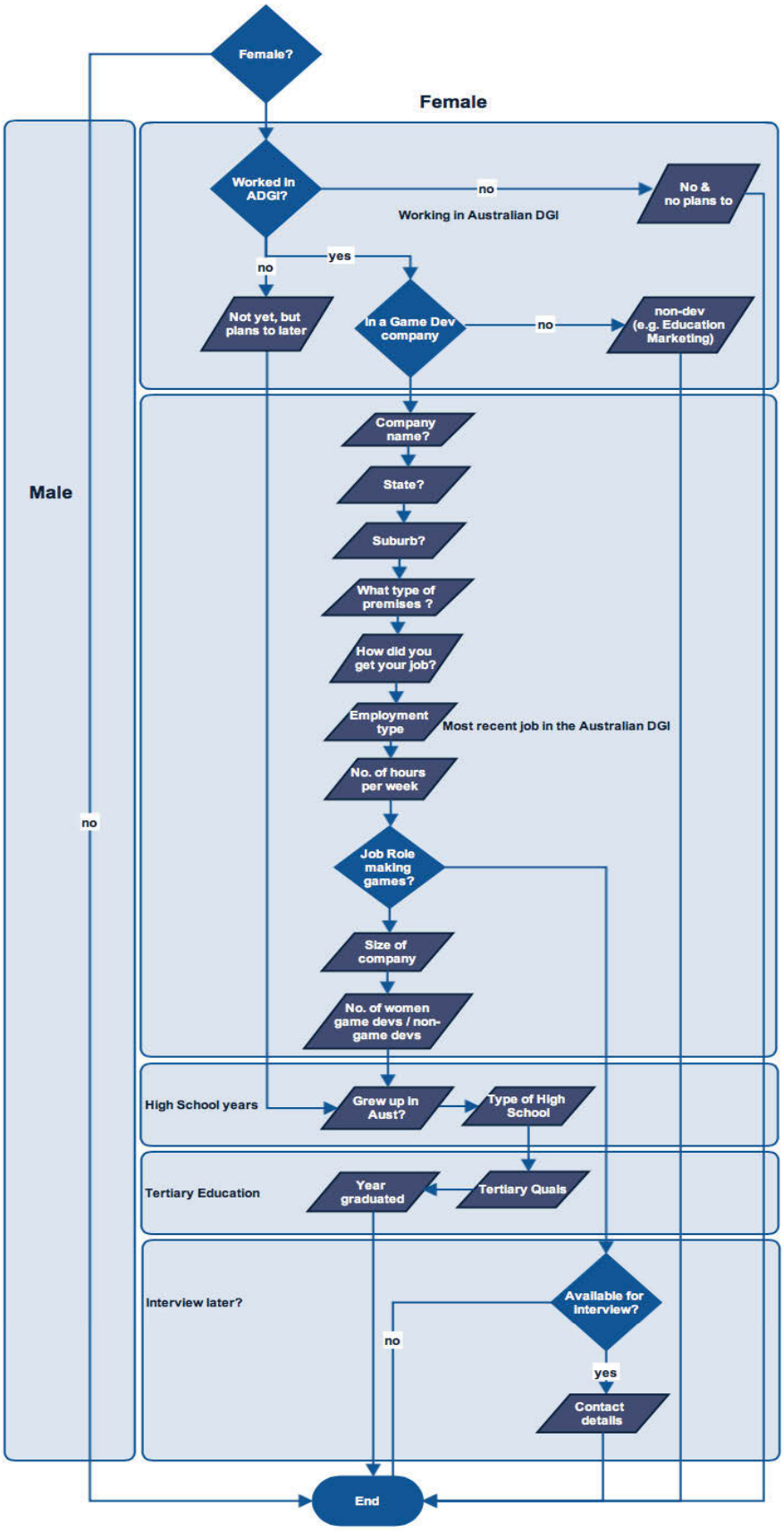


Figure 25 - Flowchart of questions for the Aussie Women Game Developers Survey

4.5 Phase 4 – Women game developer interview

The final phase and primary focus of this research was a one-on-one semi-structured, open-ended interview with a select number (10) of women participating in the digital games industry in Australia.

The interviews lasted between 1 hour and 3 hours in length and covered a wide range of topics including the participant's personal, educational, and professional backgrounds, as well as their interests, motivations, and experiences whilst working in the Australian DGI. Each interview was recorded and transcribed for subsequent analysis. Each participant was assigned a pseudonym in order to assure confidentiality.

Conducting focus groups at each place of employment was initially considered, and may have provided a rich set of data; however, this undoubtedly would have proven to be disruptive if conducted in the workplace, and time consuming and expensive if run outside of work hours. Eventually, it was decided that conducting online one-on-one interviews via Skype™ was the mutually preferred method.

These in-depth, semi-structured, open-ended interviews were the main source of data and fitted perfectly with the conventions within Grounded Theory where you start out with an idea of the kind of individuals you want to interview, then over time, after delving further, you may recognise the need to change the line of questioning, or possibly interview another group of people; perhaps women who have since left the industry, or maybe recent graduates about to embark on their first career into game development, or maybe even males working in games who can provide an even deeper understanding of the subject based on what has already been learnt.

As previously mentioned, according to the ABS, at last count in 2012 there were 51 women in Australia who work in the digital games industry. Of course, not all of these women contribute to the creation of digital games. Further, they may not all be easily contactable or even willing to participate, however informal discussions carried out at the beginning of this study indicated that many were looking forward to the results of this research and were eager to share their experiences.

Justification for conducting interviews online

Similar to the Phase 3 survey, organising access to potential respondents who are geographically dispersed was eventually accomplished using Skype™ to conduct audio interviews. The interviewer used a prepared online form as a kind of teleprompter to read questions out in a more natural, conversational manner from which responses were immediately transcribed on the fly using a combination of full quotes, phrases and memo codes which were saved into a Google Docs spread sheet. The benefits were that:

- respondents did not need to travel to be interviewed, so it was expected that more women would choose to participate if they could do so from the comfort of their own home;
- it also allowed for much more flexible hours in which to conduct interviews with participants across different time zones. The earliest was 7am and the latest was after midnight. This probably would not have been possible to do face-to-face.
- it permitted women who do freelance work or work remotely from home to be included;
- it supported the interviewer in being able to both take notes discreetly and record audio for possible transcription or checking later on without impacting the participant or making them feel self-conscious.
- it made it easier to collate and save data automatically into a spread-sheet format allowing for easier search, sort and analysis to be carried out later on;
- it enabled much richer data to be obtained than had respondents simply filled in an open-ended questionnaire, allowing the interviewer to delve deeper into responses, and where necessary, clarify issues so as to avoid bias later on when it came to analysing.
- it required no travelling, was less expensive and less time consuming.

4.5.1 Limitations

- Time constraints of the semester limited the sample size of the number of potential participants that might have been interviewed.

- One of the more important issues to bear in mind is the fact that the outcome had an inherent bias. That is, it is possible that only those people who have an interest in or care about workplace diversity would be willing to participate (not that the respondents were told exactly what the purpose of the research was, but it *is* a small industry). This could weigh results for those in favour of diversity or change, potentially resulting in data that is skewed. There is no way though to avoid this bias so it will need to be kept in mind when results are interpreted.

4.5.2 Target respondents

From the 35 respondents who participated in the Aussie Women Game Developers survey, a further four were eliminated. Even though they currently work for a game developer, they work in an administrative or marketing position. From the remaining thirty-one, only ten candidates could be chosen to participate in the one-on-one Skype interview, based on the target criteria: - the respondent must be female, has worked in the Australian DGI, and identifies as someone who has worked for a game development company in a role where they have contributed to creating games. (Refer Figure 26)

TARGET CRITERIA	IS NOT
Female	Male
Has participated in the Australian DGI	Someone who has not yet entered the industry
Identifies as someone who has worked for a game company (programmer, designer, art, sound)	Someone who works for a game company in an administration, business or marketing role

Figure 26 – Target respondent criteria

From there, the 10 subjects were selected from the group of thirty-one survey respondents using a non-probabilistic, quota sampling method, based on a quota framework matrix, which was created from demographics data collected in the phase 3 survey. Quota sampling refers to a planned way of selecting subjects that, by maximising representativeness, reduces the chance of bias. It also enables inferences to be made about the larger population from which the sample was drawn (Baker 1999).

The matrix describes characteristics of the target population based on proportions of the total population. However, for this study, not knowing whether the sample of 31

potential subjects was a good representation of all women game developers across Australia, and because the sample size was restricted to 10 subjects, participants were selected from a cross-section of data that included the respondents' location (state), their most recent job (excluding those overseas), work capacity & number of hours worked each week (preferably fulltime), their job role (technical -v- creative), the size of game company they worked for, type of school they attend, type of degree qualification they have, and how long they had been working in the industry (based off the year they graduated, assuming they starting working in the ADGI afterwards). Potential subjects were then contacted to see if they were available to attend an interview within a two-week timeframe.

Most recent job	27 + 3 + 4 + 1 = 35	Game Company 27 (8)	~~Education 1~~	~~Not a Game Dev 2~~	Changed Industries 3 (1)	Overseas 4	Between jobs 1 (1)		
Australian State	7 + 13 + 4 + 7 + 2 + 2 = 35	NSW 7 (3)	VIC 13 (2)	QLD 4 (2)	WA 7 (1)	SA 2	ACT 2 (2)	~~TAS~~	~~NT~~
Work Premises	16 + 2 + 4 + 4 + 9 = 35	Comm Office 16 (5)	Uni Campus 2 (1)	Co-Work Space 4 (2)	Bedroom/Lounge 4	Home Office 9 (2)			
How job obtained	11 + 12 + 12 = 35	Advert 11 (3)	Contacts 12 (4)	Started Company 12 (3)					
Work Capacity	14 + 1 + 4 + 2 + 5 + 9 = 35	Fulltime 14 (6)	P/Time 1	Casual 4	Voluntary 2	Deferred 5 (2)	Owner 9 (2)		
Weekly Hours	1 + 4 + 3 + 12 + 9 + 6 = 35	0-5 1	6-15 4	16-24 3	25-40 12 (4)	41-50 9 (3)	50+ 6 (3)		
Role / Skill	12 + 3 + 7 + 1 + 7 + 1 + 3 + 1 = 35	Design 12 (2)	Creative 3 (1)	3D 7 (1)	Audio 1	Technical 7 (5)	QA 1 (1)	~~Mrktn 6~~ 3	~~Admin~~ 1
Total Company Staff	8 + 13 + 4 + 5 + 5 = 35	1-3 8 (2)	4-9 13 (3)	10-19 4 (1)	20-50 5 (2)	50+ 5 (2)			
Grew up in Aust?	33 + 2 = 35	Yes 33 (10)	No 2						
High School type	4 + 12 + 19 = 35	Cath/Priv Co-ed 4 (1)	Girls 12 (4)	Public 19 (5)					
Tertiary Qualif.	31 + 4 = 35	Yes 31 (10)	No 4						
Degree Type	5 + 7 + 2 + 8 + 7 + 6 = 35	Dip Art 5	Dip Games 7 (3)	B. Anim 2	B. Game 8 (2)	BScIT/CS 7 (3)	Other 6 (2)		
Graduating Year	1 + 14 + 11 + 6 + 3 = 35	2014+ 1 (1)	2011-2013 14 (2)	2006-2010 11 (4)	2003-2007 6 (2)	Before 2003 3 (1)			

Figure 27 - Breakdown of survey responses for sampling matrix

The numbers in black in each data field represent the number of respondents who indicated that particular choice in the Phase 3 survey. From this matrix, the ten interview subjects were selected from a cross-section of fields to ensure an even, proportional spread. Unfortunately, as fields are inter-related, it was not always possible to cover all bases exactly. For instance, there were 13 possible subjects to choose from in Victoria, however, to ensure a consistent spread in other areas, only two could be chosen from this group for the Phase 4 interview. Similarly, there were nine female game development business owners who responded. Though this was unexpectedly high, unfortunately, only two could be interviewed due to the respondent limit.

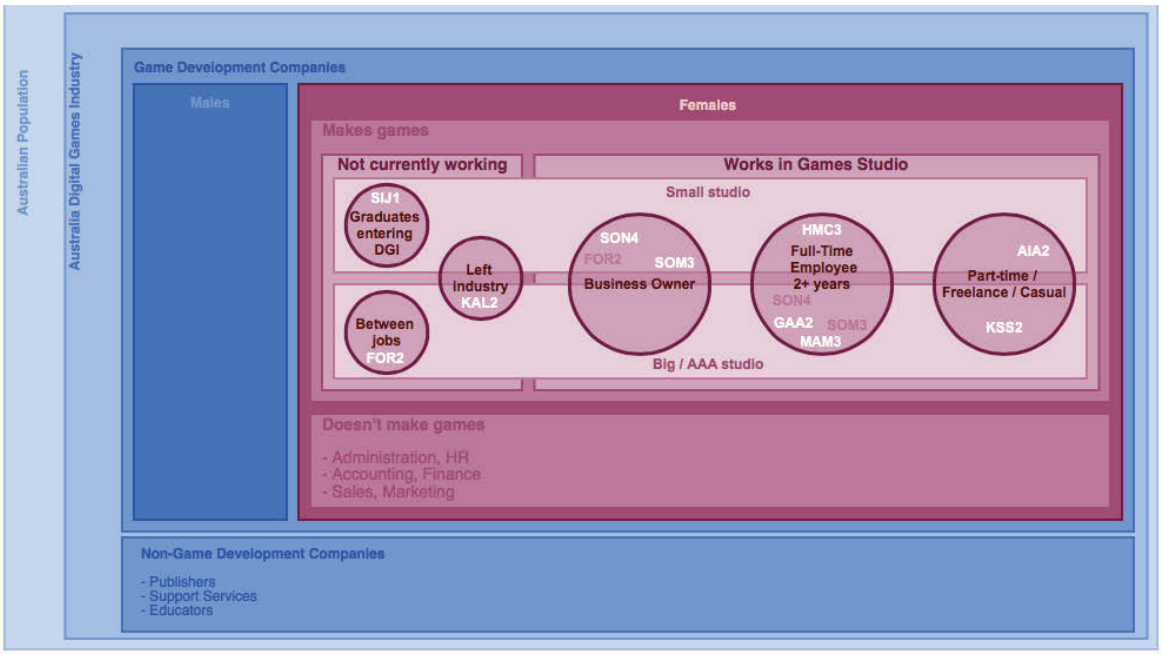


Figure 28 - Interview respondent sampling

The result of the sampling is the list of the ten interview subjects below. For anonymity, each was assigned a random code. Ages are approximate, based on when they graduated.

RESPONDENT CODE	*~AGE*	*STATE*	*EDUCATION*	*ROLE*	*YRS*	*COMPANY TYPE & Progression*
KAL2	*24*	*NSW*	*BSc IT*	*Programming*	*2*	*AAA > left industry*
SIJ1	*21*	*ACT*	*Dip Game Dev.*	*Programming*	*Grad*	*Grad > Start Up Indie*
HMC3	*27*	*WA*	*BSc IT*	*Programming*	*3*	*Medium-size studio*
SON4	*39*	*QLD*	*BA Film*	*2D & 3D Art*	*10*	*AAA > Own business*
KSS2	*24*	*VIC*	*Bach Game Dev*	*Art*	*1*	*Start Up Indie*
GAA2	*26*	*NSW*	*Dip Game Design*	*Design*	*5*	*AAA > Overseas*
FOR2	*23*	*NSW*	*BSc IT*	*Programming*	*3*	*Own Business > Games Education*
SOM3	*25*	*QLD*	*A.Dip. Game Dev*	*Testing / QA*	*4*	*AAA > Own business*
AIA2	*23*	*VIC*	*BSc Game Design*	*Design & UI*	*Grad*	*Start Up Indie*
MAM3	*28*	*ACT*	*PhD AI*	*AI Programming*	*8*	*AAA Company*

Figure 29 - Phase 4 - Final list of 10 interviewee respondents

4.5.3 Deciding what to ask

Ultimately, the purpose of the interview was to see if any light could be shed on the research question "*Are there specific factors that continue to ensure women are underrepresented in the Australian digital games industry?*"

Of course asking this question outright would have invited biased and subjective, or else canned responses. Hence, the list of suitable questions that were both broad in nature and specific to issues that women working in the ADGI would relate to drawn from the three areas of *Individual Differences* (Figure 30), the *Pipeline Issue,* (Figure 31) and *Recruitment and Retention* (Figure 32).

Many of the questions have overlap, as, for instance, you cannot ask about childhood game playing habits without possibly touching on family or school. Therefore, to ensure that the approach remained inductive, the question-list was used more as a guideline as it is almost impossible to restrict conversations to explicit topics and pigeonhole responses into specific boxes on the fly.

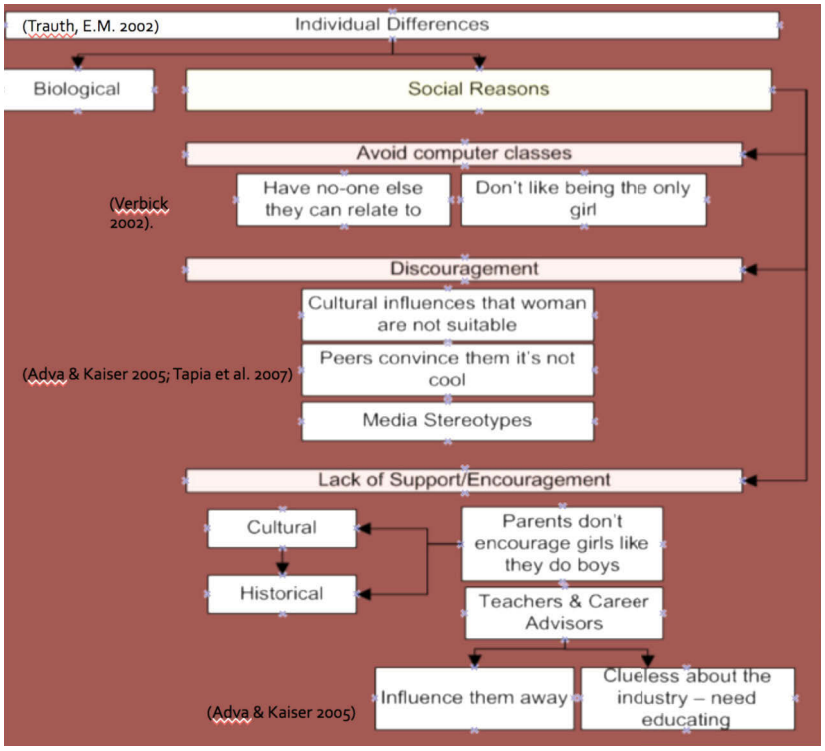


Figure 30 - Influences - Individual Differences

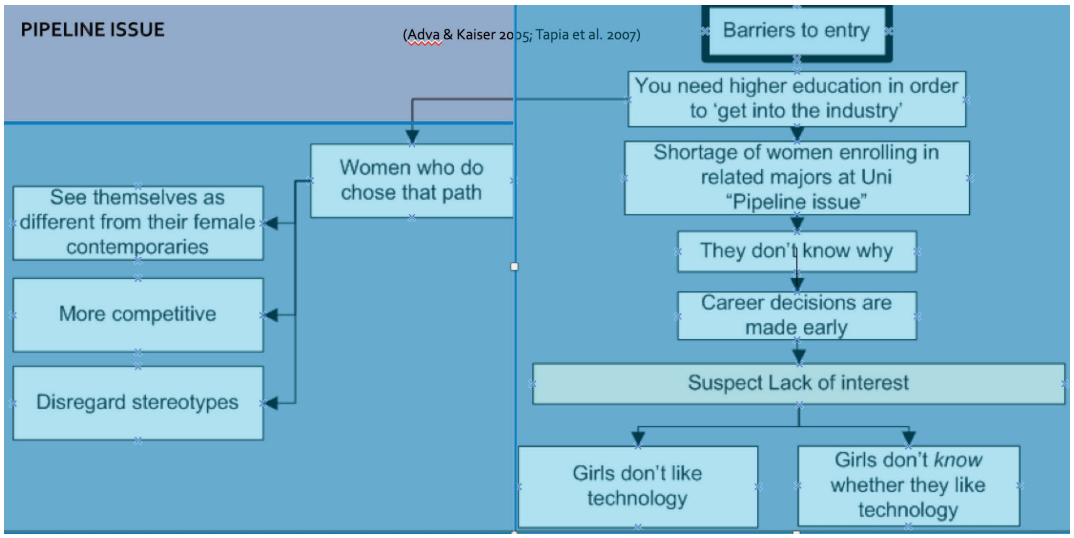


Figure 31 - Influences - The 'Pipeline' Issue

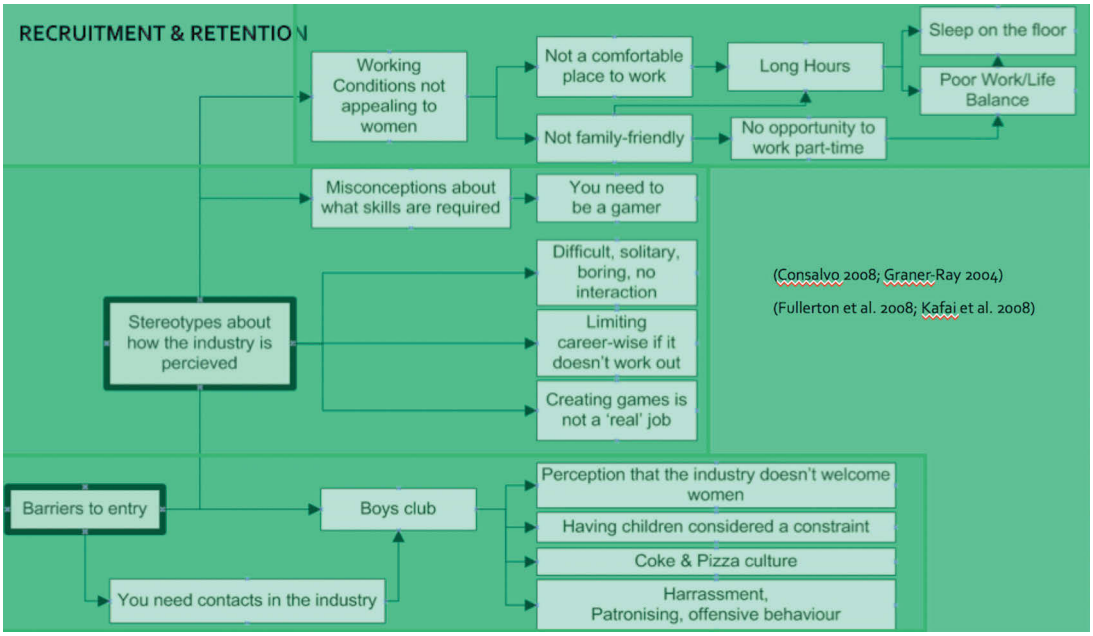


Figure 32 - Influences - Recruitment & Retention

4.5.4 Question list

	Anonymous Respondent Code
	Location
BACKGROUND	

	Tell me a bit about yourself when you were a kid. What kind of kid were you?
	What type of student were you at school?
	Degree / Diploma?
	Graduation Year
	On average, how many women were in your classes?
	Marital Status / kids
	If you have a partner, what sort of job do they have?
VIDEO GAMES	
	Do you play video games?
	Tell us some of the types of games you like to play?
ROLE MODELS	
	Do you have any role models? If yes, who?
	If you said YES, then What is it about your Role Model that you admire most?
SUPPORT / ENCOURAGEMENT	
	Can you recall when you first wanted to work in games? When was it (year/age)? And if you can recall, why?
	How did you first get into the Industry?
GETTING INTO GAMES	
	What did your family think of you working (or wanting to work) in games?
	What did your friends/contemporaries/partner think of you working (or wanting to work) in games?
	If you had discussed with a school career advisor that you wanted to work in games, what would their advice have been to you?
WORKING IN THE GAMES INDUSTRY	
	Tell me the story about how you got your FIRST JOB in the Games Industry
	If no longer in the games industry - Why did you leave?
	What about your job do (or did) you enjoy most?
	How confident are/were you in your job?
	What is / was your long-term goal in the games industry?
	What would be your ideal job?
WORK CONDITIONS	
	How did the people that you worked closely with think about the working conditions?
	Have you experienced crunch-time?
	Is/was crunch something that is/was common where you work/worked?
	Do you know whether you are/were being paid fairly compared to others in similar positions where you work?
	Are/were there any perks with your job?
	Compared to say your friends outside of work, do you think your working conditions are better or worse, and why?
WOMEN GAME DEVELOPERS	
	How many women do you work closely with?
	Do you feel isolated or outnumbered?
	Have you noticed whether the number of women creating games changed during the time you've worked in the industry?
	Why did you think women stay in the industry?
	Why did you think women leave the industry?
	Have you had any problems with the people you worked with? (or perhaps while working in groups at University)?
NETWORKING	
	Do/did you attend any game-related conferences?
	Do/would you socialise with your game making co-workers outside of work?
ENCOURAGING WOMEN INTO THE INDUSTRY	
	Do you think there should be more women in the games industry? Explain.
	Would you (or have you) encouraged/discouraged other women to work in games?
	In what ways do you think women could be encouraged?
	Do you think there should be initiatives at school, university or work that encourage more women into the game industry? Any suggestions?

Figure 33 - List of interview questions

4.5.5 Question flow

Before any interviews were conducted, the researcher tested out the questions on two external subjects not related to the games industry (a school teacher, and a midwife) to firstly, time how long each interview would take, and secondly to see whether the questions flowed and made sense. Adhering to good interview practices such as keeping the respondent in one mind-set at a time, as well as ensuring that the more introspective questions were placed towards the middle of the interview were observed (Baker 1999).

4.5.6 Conducting the interview

As mentioned, long questionnaires can induce fatigue. It would have been preferable for each interview to be completed within forty minutes, but it was obvious that garnering richer data from respondents was going to take a lot longer and would eventually be worth the extra time spent.

Before commencing, each respondent was 'warned' that it could take longer than expected, and was asked to give an absolute cut-off time when they would like the interview to be terminated. Although audio was recorded for most of the interviews, this was only done as a backup precaution. Dialogues were not fully transcribed as it would have taken upwards of 60 hours to complete (Baker 1999), and may not have been worth the effort. Rather, the interviewer both jotted down memos on card and typed up verbatim notes continually throughout the interview, and only referred back to the audio recordings for clarification, which ultimately turned out to be a less time-consuming method, whilst still allowing the 'dictated' responses to be adequate.

Interviews were conducted more like casual conversations, which ran along a chronological timeline allowing the respondent to anticipate when it was appropriate to bring up certain topics. For instance, starting off at childhood, talking about family, growing up, siblings, school, game playing habits, then high-school, building a rapport along the way. It was important to establish an understanding of the respondent's background before getting into more in-depth discussions about their experiences at university and later, working in the Australian digital games industry.

Because the researcher had shared experiences in the industry and at university, it was more like a conversation comparing notes and experiences along the way, rather than a straightforward, question and answer session. Finally, as the discussion unfolded,

almost naturally, respondents became aware of the value of their experiences and felt encouraged to give their input about what they think could, or should be changed if they had the power to do so.

Not every question was asked of every respondent. Covering all questions would have made the interview too long and too exhausting for both parties. The areas that were focussed upon for each subject largely depended on the respondent's interests and experience. For example, some subjects seemed to have more to say about their experiences during group work in their game development subjects at university, whilst others may have placed more emphasis on their encounters while working at a game development company.

4.6 Data Analysis Approach to Interviews

The aim of analysing qualitative data is to 'capture a holistic sense of the environment being studied' (Baker 1999, p. 335). The goal of the researcher is to gain insight into everyday life and figure out how similar themes that form, relate and connect the data in a way that fits so that those within the industry may recognise and accept it as their own (Goulding 2006).

4.6.1 Preparation of data

From particular phrases, concepts, and keywords, which were captured by the researcher during the interview and typed verbatim into a GoogleDoc form, themes were developed. In addition, during this same phase, the researcher also created *memos* – at first these are notes, which were jotted down onto cards, and later after the interview, further fleshed out. These are essentially ideas and observations made outside of what the respondent specifically says. Immediately after the interview, these memos are typed up separately and kept aside until after the next interview where more memos were created and compared, and further themes extracted from the spreadsheet and from subsequent interviews to give a richer picture.

4.6.2 Coding Levels

At the core of any qualitative research (which focuses more on words than numbers), is the method of analysing those words. With Grounded Theory, using an iterative approach of data collection and analysis throughout the study, there lies a process whereby the collation of data was broken down into a sequential series of stages that allowed data to be indexed progressively from very descriptive *Open coding* - where

categories are first developed, to *Axial coding* - where categories were then interconnected, and then onto *Selective coding* - where from these connected categories a story started to emerge which ultimately produced a set of proposed hypotheses.

Ordinarily, a software application such as Nvivo would have been used, but as the researcher had largely started to manually code much of the qualitative data, NVivo was abandoned in preference to using index cards and Excel spread sheets for analysis

4 (1 1)/school-v-uni structure/interaction
4 (1 2)/school-v-uni structure/learning
5 (1 1)/self/personality
5 (1 1 1)/self/personality/as child/bookworm
5 (1 1 2)/self/personality/as child/bright
5 (1 1 3)/self/personality/as child/confident
5 (1 1 4)/self/personality/as child/introvert
5 (1 1 5)/self/personality/as child/introvert
5 (1 1 6)/self/personality/as child/lazy
5 (1 1 7)/self/personality/as child/nerd
5 (1 1 8)/self/personality/as child/passion
5 (1 1 9)/self/personality/as child/strength
5 (1 2 1)/self/personality/as adult /bright
5 (1 2 2)/self/personality/as adult /introvert
5 (1 2 3)/self/personality/as adult /passion
5 (1 2 4)/self/personality/as adult /strength
5 (1 2 5)/self/personality/as adult/confident
5 (1 3 1)/self/location/city
5 (1 3 2)/self/location/rural
5 (1 3 3)/self/location/suburbs
5 (1 4 1)/self/relationship/family/cousin
5 (1 4 2)/self/relationship/family/parents/
5 (1 4 3)/self/relationship/family/parents/father
5 (1 4 4)/self/relationship/family/parents/father/occupation
5 (1 4 5)/self/relationship/family/parents/mother
5 (1 4 4)/self/relationship/family/parents/mother/occupation
5 (1 4 4)/self/relationship/family/siblings/brother
5 (1 4 4)/self/relationship/family/siblings/brother/influence
5 (1 4 4)/self/relationship/family/siblings/sister
5 (1 4 4)/self/relationship/school
5 (1 4 4)/self/relationship/school/peers
5 (1 4 4)/self/relationship/school/boyfriend
5 (1 4 4)/self/relationship/school/teacher
5 (1 4 4)/self/relationship/school/career advisor
5 (1 4 4)/self/relationship/as adult/partner
5 (1 4 4)/self/relationship/as adult/work colleagues
5 (1 4 4)/self/relationship/as adult/boss
5 (1 4 4)/self/relationship/as adult/classmates

Figure 34 – Excerpt of nodes used for coding

In addition to manual indexing, a node-map was created as a visual reference for each and subsequent interviews and was used for constant comparisons. (see Figure 35)

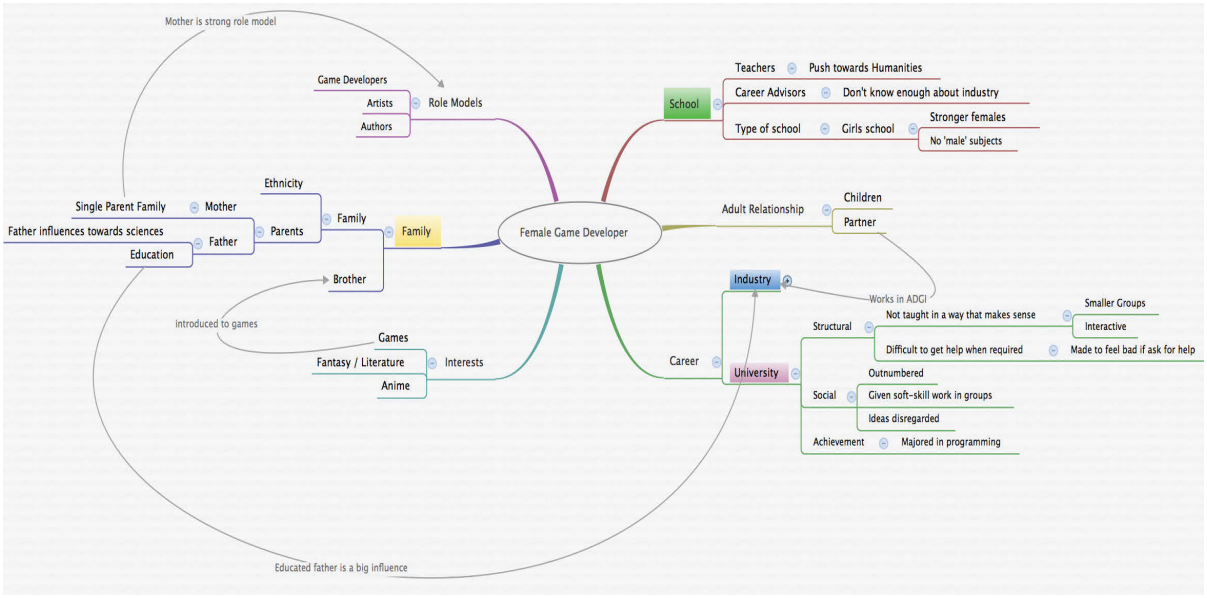


Figure 35 - Node map created for each interview

4.6.3 Simultaneous data collection and analysis

Rather than collect data first and then analyse it down the track, using the Grounded Theory approach, allowed for both the data collection, and analysis phases to be carried out simultaneously where the data is constantly compared. From the concepts and categories that have been distilled from the data collected, a hypothesis is derived.

Comparing multiple incidents was a way to ensure bias was avoided during interpretations of initial observations. Throughout this process, it was important to maintain the connections between categories (codes) and data ensuring consistency by continuing to apply them with the same approach, whilst always being mindful of any variations that were discovered along the way.

4.6.4 Recurrent theme and Polarised topics

In addition to each subject's responses that were recorded verbatim for later coding, memos were also written down separately. Memos were anything interesting or outstanding that the researcher sensed that the subject felt strongly about. These became known as 'polarised responses'. That is, the researcher was looking out for any pronounced comments or experiences that respondents happen to bring up in case subsequent subjects touched on the same or similar matter, whether it be exactly the same, or the complete opposite.

In this study, the very first interview took the longest as the researcher, having a blank slate, had no idea what to look out for, so instead, collected *everything.* From then on, at the end of each interview, a snapshot of all polarised data was taken and put aside. Polarised, meaning either the current subject's responses were very closely aligned, or their experiences were completely opposite. That is they loved or hated it. Either way, they felt very strongly about a particular issue. Any generalised, middle-of-the-road or fence-sitting responses were not at all noted. Once an interview was concluded, the researcher compared notes from the most recent interview, together with all of the previous interviews, which had also contained polarised views. Eventually at the conclusion of all ten interviews, four significant 'polarised' topics emerged. Throughout the data collection phase, these were entered into a table (Refer Figure 36) and colour-coded for constant comparison.

Recurrent themes

The first two topics (which are detailed in **6.1.3** and **6.1.1**) were initially noted because of the recurring thread that continually arose throughout every respondent's interview. Each of these topics built upon previous respondents' feedback on the same topic where there were strong similarities across all respondents.

- The person who had the *biggest influence* on the respondent as far as introducing them to, and *playing games* with them *as a young child.* (blue)

- Childhood *interests* and *traits.* (yellow)

Polarised topics

The second two topics were those that the researcher felt respondents were passionate about. These themes were marked either red (strong negative response) or green (strong positive response), and compared with all previous respondents who commented, either similarly, or completely the opposite.

- Experiences at university with group-work (red / green)

- Experiences in the workplace (red / green)

For instance, using the Group work topic, the second interviewee had a bad experience in this area, they first interviewee had nothing to say either positive or negative. After the third interview, the second and third responses were compared to see what possible similarities or reasons could be attributed to this. In this particular case, it is clear that these negative experiences with group work all came from respondents who attended university. Similarly, those respondents that attended college had positive experiences. This is discussed further under the findings in **6.2.2.**

The second topic, which covered experiences in the workplace, again shows pronounced negative experiences in AAA companies. Connecting this data with the timeframe (years) that the respondent' was referring to, shows that these occurrences happened more than 2 years ago. Likewise, the tenth interviewee who currently works for a AAA company had only positive experiences.

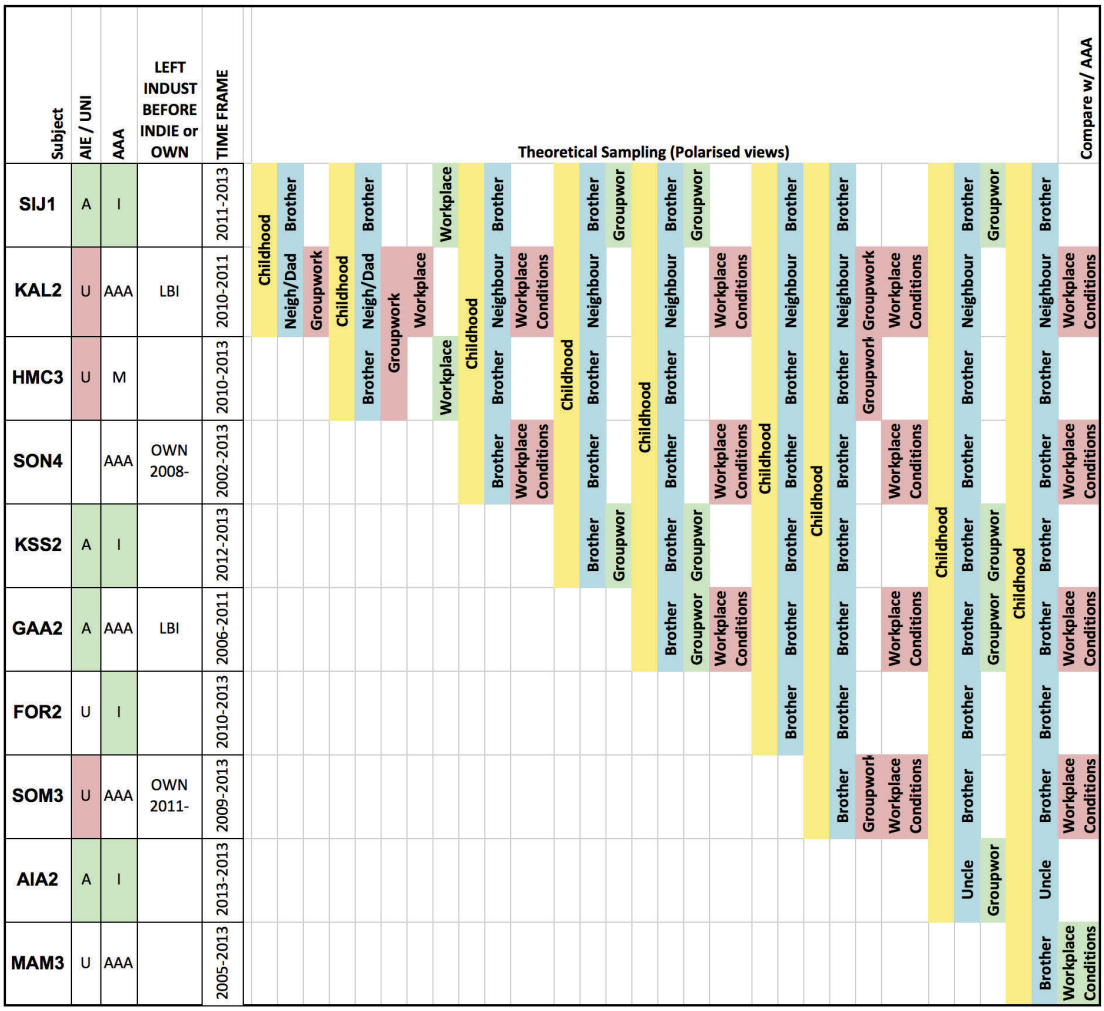


Figure 36 – Recurring themes & Polarised responses

Comparing multiple instances of the same incident was a way to ensure bias was avoided during interpretations of initial observations. Throughout this process it was important to maintain the connections between categories (codes) and data ensuring consistency, by continuing to apply them with the same approach, whilst always being mindful of any variations that were discovered along the way.

4.6.5 Completion of analysis

After continuing to search for evidence that contradicts or refutes any emerging theories, eventually saturation was reached when all leads had been exhausted and there was no point in investigating any further. Along the way it was important to ensure that every occurrence in which observations conflicted with existing theories exposed 'theoretical gaps and silences' (Babbie 2011).

To assess the appropriateness of an emerging theory you need first ensure that it fits the situation, and that it helps the subjects in that situation to make sense of their experience and to manage the situation better.

4.6.6 Risks

As a caveat, one of the main downsides noted whilst investigating Grounded Theory, is that there is still a risk, even after collecting and analyzing data, that one still may not find any substantial or significant pattern.

5 : QUANTITATIVE DATA RESULTS

5.1 Game company Database and Census

Phase 1 of this study covered the creation of a database of all businesses within the Australian DGI and Phase 2 is a summary of that database based on results gathered from the census, as broken down in the table below.

5.1.1 'Headcount' Summary

A total of 157 were marked as Closed, deemed to be no longer operational. Another 17 were removed, as their core business was not specifically in making digital games, leaving a net total of 182 potential businesses to be surveyed.

DATABASE of AUSTRALIA DIGITAL GAME COMPANIES (as at 01.11.13)			COUNT
TOTAL	**Companies in database**		**356**
N/A	**Companies that do not develop games**		**(17)**
CLOSED	Game companies confirmed CLOSED	117	
	Game companies assumed CLOSED (after 3 unsuccessful attempts to contact)	36	
	Game companies confirmed INACTIVE	4	
	Total game companies deemed CLOSED as at 01.11.13		**(157)**
ACTIVE	Game companies confirmed ACTIVE - Fulltime	**111**	
	Game companies assumed ACTIVE (did not respond, but were checked)	**26**	
	Game companies confirmed ACTIVE – Not Fulltime	**45**	
	Total game companies deemed ACTIVE as at 01.11.13		**182**
	Total game companies confirmed ACTIVE as at 30.06.13		**(84)**
	NETT +/- CHANGE between 30.06.12 and 01.11.13		**98**

Figure 37 - Snapshot as at 01.11.13 of the Status of Digital Game studios in Australia

5.1.2 Definitions of Categories

Total companies in database (356) - Every game company that was mentioned or found to be still listed as active in any database, list or on any website, regardless of whether they may in fact have been closed or suspected of being closed as at the last census, were included and sent an email so they could be checked and confirmed.

Companies that do not develop games (17) - These companies, although they come under the umbrella of the Australian DGI, in fact do not develop games as their core business. These include, game marketing and publishing companies, and companies that provide tools or creative support in the way of graphics, 3-D assets and animation or video services. This category also includes multimedia companies that create simulations and serious games for third-party companies rather than the public.

Total game companies confirmed CLOSED (117) **-** where the company or business is no longer registered on the ASIC register, or where the directors or ex-employees confirmed that the company no longer exists.

Note: Although this figure may appear high, it actually includes quite a few companies that had already closed before the ABS 2012 census.

Total game companies assumed CLOSED (36) - where the company or business did not respond to any emails or messages between 01.10.13 and 01.11.13. Where emails bounced, alternative methods of trying to get in contact were sought, including sending private messages to their Facebook, Twitter and LinkedIn accounts as well as messages sent via other industry contacts). A minimum of three attempts was made to contact any company that did not respond before assuming they were closed. Searches were also carried out via ASIC and .auDA.

Total game companies confirmed INACTIVE (4) - where the company or business confirmed they are not currently making games. Although the company or business is still registered, directors or ex-employees confirmed that the studio is currently on 'hiatus' but intends to resume business at a later date.

Total game companies confirmed ACTIVE – Fulltime (111) - where the studio confirmed they are making games.

Total game companies assumed ACTIVE (26) - where the company or business did not respond to any emails or messages between 01.10.13 and 01.11.13. In some cases, these companies may in fact have responded anonymously to the census survey, but did not let the researcher know. Each was manually confirmed to be active, either by checking their website, Facebook page, or Twitter feed to see whether there had been any posts made by the company within the past 2 months.

Total game companies confirmed ACTIVE – Not Fulltime (45) - where the studio has confirmed that they are currently making games. However, they may be considered a 'pre-start-up' working on their first game title, but not yet working to full capacity, or the business is currently developing and publishing games or earning revenue from previous games, but in a less than fulltime capacity.

Total game companies confirmed ACTIVE as at 01.11.13 (182) - includes all businesses that are '*Active*', '*Assumed Active*', and '*Active - but not Fulltime'*. That is, "***Open for business, and making games*** as at 1st November, 2013".

Total game companies confirmed ACTIVE as at 30.06.12 – where the company or business confirmed to the ABS that they were developing games as at 30th June 2012.

NETT +/- CHANGE between 30.06.12 & 01.11.13 – the nett difference between the total numbers of digital game companies in Australia that were operating as at the census cut-off and the cut-off date for this study.

Anonymous responses

A total of 22 businesses responded anonymously to the survey, of which 7 active businesses personally wrote to the researcher afterwards to confirm that they had in fact participated. These were presumed to be part of the 26 companies *assumed Active*.

Duplicate submissions remove

A tutor at a game development college in Canberra inadvertently shared the URL amongst several of his students as well as several start-ups within the campus complex. This resulted in 17 entries needing to be removed because either the students did not represent a game development company, or multiple conflicting entries were entered 'just to test the census out'. Fortunately, these entries, mostly entered anonymously, were easily picked up within an hour as they were all marked with the same postcode as the college campus.

Missed companies

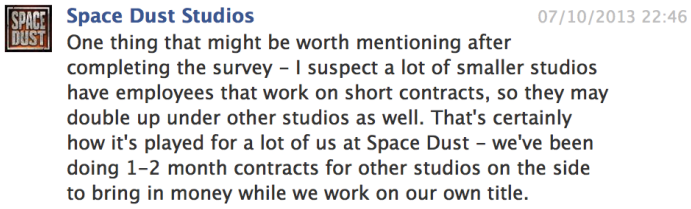
After the close off, attention was called to the fact that two companies that were well known within the industry had not been included in the original database (they did not appear on any of the source websites, but probably should have been included at the time). Notwithstanding, this does not change the total number of Active game development companies.

Riot Games and KMM. Although Riot Games has an office in Sydney, they do not develop their flagship game, League of Legends in Australia. Their presence in Sydney is merely to host Oceania servers and to grow the community (Parker 2013). Similarly, it was announced publically in June that KMM Games would close their doors although the company was still operating (Harris 2013).

Number of staff and gender breakdown

Although 156 game development studios responded by the 1st November 2013 cut-off

date, there were still 26 studios that had not responded to the census[6] (yet were confirmed through multiple sources to be currently operational). This means that even though a fairly accurate estimate of 182 digital game companies are currently operational in Australia, the total number of people employed at this point cannot yet be accurately determined - though it is in excess of 800. This of course is based purely on the number of permanent staff already reported. Additionally, there is an estimate of around another 220 freelance and casual staff who work in the ADGI though they may work across multiple studios.



Similarly, the numbers of women cannot yet be confirmed, but based on the 156 companies that did respond, there are in excess of 150 women working (both fulltime and casual) in the Australian DGI. Based off the preliminary figures this equates to around 16% of the industry workforce, with 13% contributing to the actual creation of games.

5.1.3 The importance of the future of the AGDI

Anyone outside of the DGI may have pause to wonder why when the industry only employs around a thousand people out of an entire population of over 23 million in Australia, why the industry is even important. Despite it appearing to me small and of no consequence, the potential for the ADGI is enormous. One only has to note that within the past two months, GTA V was released on September 17, 2013, and in the first three days grossed $1B. Less than 2 months later on November 5, 2013, Call of Duty - Ghosts was released and made $1B in sales on day one. As far as entertainment is concerned, no device or movie has ever come even close to generating those kinds of sales or excitement upon release, so it is clear that this is an industry with enormous growth potential.

[6] Beyond this thesis, the remaining 26 studios will be contacted again in the hope that additional data can be collected (backdated to Nov 1, 2013) so that the figures can be finalised for publication in Tsumea in early 2014.

5.1.4 Recent Timeline of the industry in Australia

Between 2007 and 2013, the Australian DGI has gone through many changes. The scene has transformed from a few relatively large companies that relied heavily on work coming out of the US, to then many of those same companies folding just a few years later when the GFC hit. From the ashes, veteran game developers with many years experience under their belt, along with recent university graduates started opening up newer, smaller studios[7], most of them indie.

5.1.5 Indie Phase is good news

With this new indie scene has come positivity about the industry in Australia and its potential for further growth.

Gone it seems is the old culture with its poor work practices and culture that originated and mimicked all that is bad with the AAA companies overseas and women seem to agree with Whitney Hills, an American game developer and author, when she explains the gender problem in the AAA space;

> "I'd say it's worse in AAA, mainly because the power dynamics are different in larger, more corporate companies. There's more use of hierarchical power in AAA, but that's an issue that affects everyone's comfort and level of participation, not just women's. I know at least a few women who prefer working in the indie space because they find it less isolating or threatening (Brightman 2013).

[7] As per the recent Census conducted for this research. Exact figures are pending.

5.2 Results of the Quantitative 'Women in Games' Survey

In order to cast the widest net possible to locate appropriate subjects for the phase 4 interviews, *snowball sampling* was employed. Snowball sampling, which is a non-probability sampling technique, is appropriate when members of a special population are difficult to locate (Babbie 2011, p. 208), such as with this study, female game developers. It refers to the process of accumulation, as each game company and each female game developer located was asked to suggest other women that they may happen to know who are currently working in the ADGI, and who might be interested in participating in the survey.

Of the 63 people across the country who were nominated, all were sent an invite. A total of 47 actually submitted an entry in the "Women in Games" survey. After removing two submissions from males, and seven from female game development students (who have not yet worked in the industry), a total of 38 women working in the Australian DGI took part in the survey. Of these 38 women, a further three were excluded, as they had not worked for a game development company – leaving 35 to complete the survey.

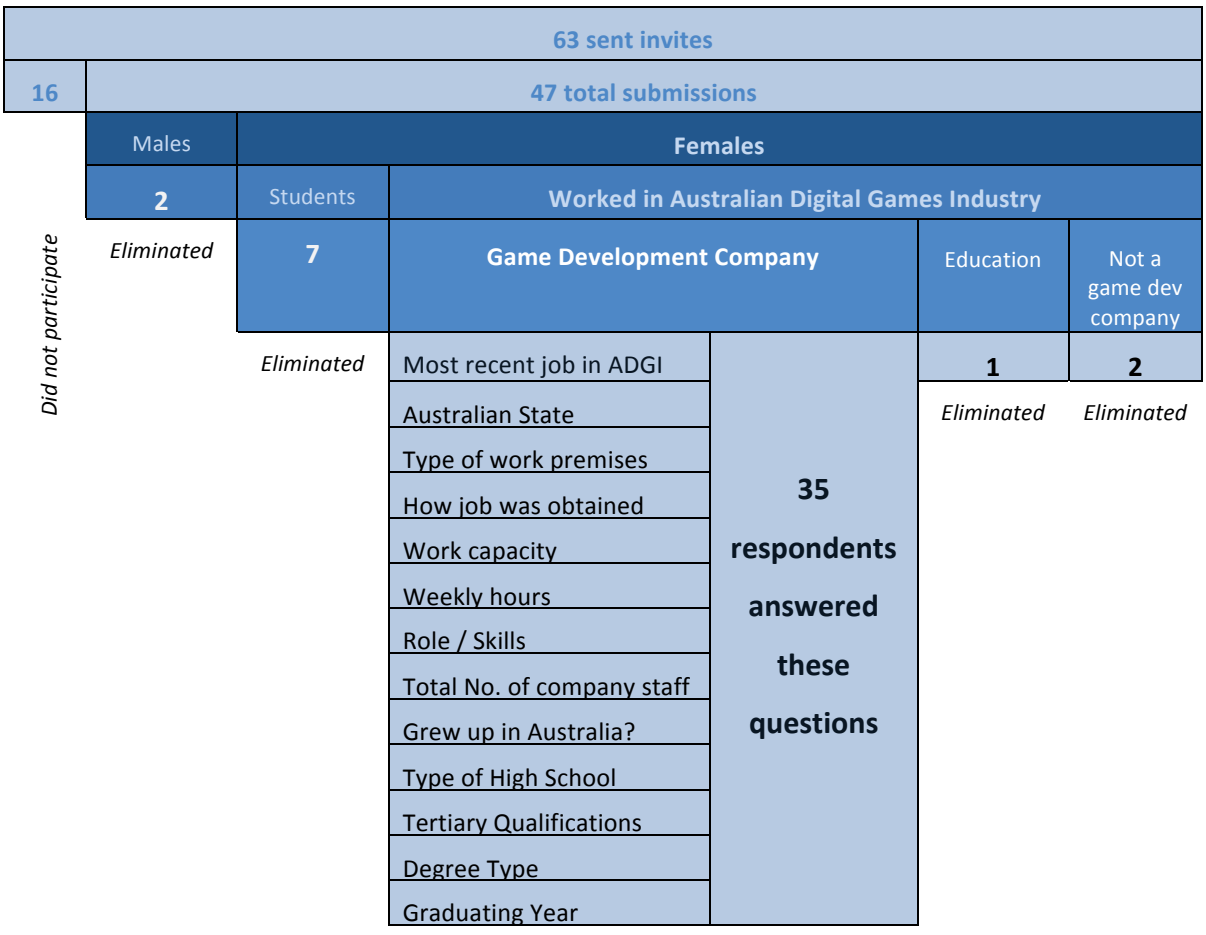
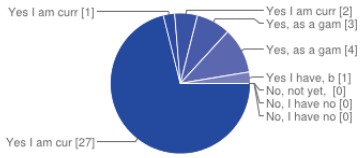


Figure 38 - Respondent breakdown - Aussie Women Game Developer survey

Of the 35 respondents who answered all the questions, 27 currently work for game developers in the Australian DGI; four had since moved overseas, three have since changed industries, and one was between jobs. Those who had moved overseas to work in games in North America and Europe, did so between 2010 and the beginning of 2012, just after the GFC started to make its impact and again after the closure of Team Bondi, the developer of the critically acclaimed AAA game, *L.A. Noire* in the middle of 2011.

Your most recent or most significant job

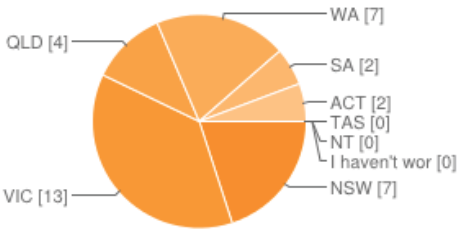


Yes I am currently working for a Game Development company	27	71%
Yes I am currently working in the Australian DGI in Education	1	3%
Yes I am currently working in the Australian DGI (but not in Game Development or Education)	2	5%
Yes, as a game developer, but have since changed industries	3	8%
Yes, as a game developer, but I have since moved overseas to work in games	4	11%
Yes I have, but not at the moment, but I plan to go back	1	3%
No, not yet, but I am currently looking	0	0%
No, I have not, I plan to later on, but am not currently looking	0	0%
No, I have not, and don't plan to in the near future	0	0%

Locations

Typically, respondents were located in one of the state capital cities, with a higher concentration from Melbourne, Victoria (37%), followed by Sydney, New South Wales, and Perth, Western Australia, each with twenty per cent, Brisbane, Queensland (11%) and 6 per cent each for Canberra, ACT and Adelaide, South Australia.

Which State do you, or did you last work in the Australian DGI?

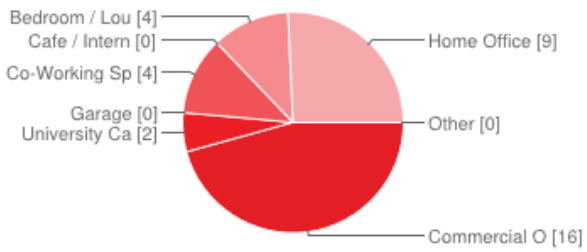


NSW	7	20%
VIC	13	37%
QLD	4	11%
WA	7	20%
SA	2	6%
ACT	2	6%
TAS	0	0%
NT	0	0%

Premises

While sixteen women work in a commercial office, thirteen work from home. With the recent trend of indie developers, four develop games in a co-working space[8], whilst two work from a university campus.

What type of premises do, or did you work from?

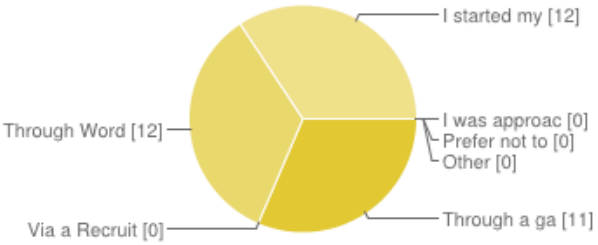


Commercial Office	16	46%
University Campus	2	6%
Garage	0	0%
Co-Working Space	4	11%
Cafe / Internet Cafe	0	0%
Bedroom / Loungeroom	4	11%
Home Office	9	26%
Other	0	0%

Getting a job in games

Split fairly evenly, three ways - eleven women obtained their most recent job in the Australia DGI through a company advertisement, and twelve through personal contacts or word-of-mouth. The remaining twelve decided to start their own individual game development companies.

How did you get your most recent job in the Australian DGI?



I was approached / 'head-hunted' while working at another g
Through a game company advertisement
Via a Recruitment Agency
Through Word-of-mouth / while networking / at an event
I started my own company
Prefer not to say
Other

Work capacity

After excluding fifteen women who work permanently in the ADGI, and the twelve company owners - three of which nominated that they were working under a *deferred payment scheme*[9], the remaining eight either work casual (4), voluntary (2) or under a deferred profit sharing scheme.

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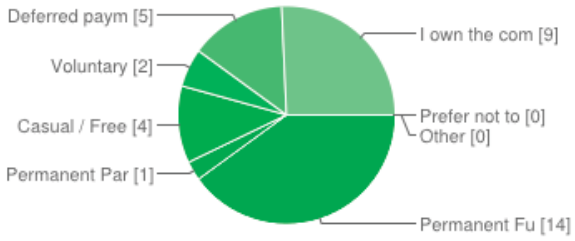
[8] A Co-working space is a shared working environment, often an office, where multiple businesses, often start-ups meet to work and collaborate on projects.

[9] A euphemism for business owners who going without wages for the first year or so until the company starts making a profit.

In what capacity are you / were you last, employed?

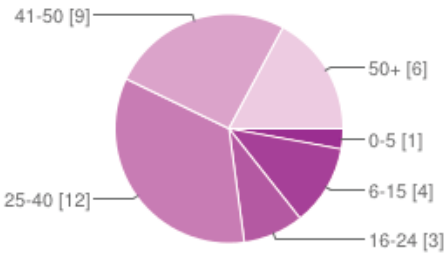


Permanent Full-time	14	40%
Permanent Part-Time	1	3%
Casual / Freelance	4	11%
Voluntary	2	6%
Deferred payment / profit sharing scheme	5	14%
I own the company	9	26%
Prefer not to say	0	0%
Other	0	0%

Hours worked per week

Forty-three per cent of women are currently working in excess of 40 hours a week, with just less than half of them working more than 50 hours a week. One-third of women work a typical 25-40 hours a week and the remaining eight work less than 25 hours a week.

How many hours on average would you work in a typical week at this job?

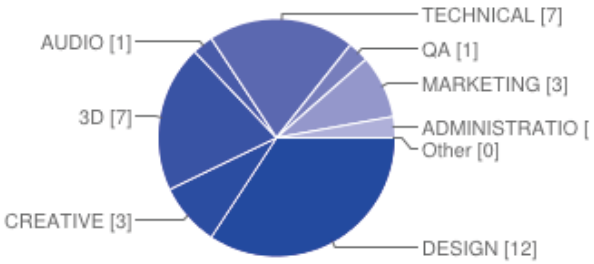


0-5	1	3%
6-15	4	11%
16-24	3	9%
25-40	12	34%
41-50	9	26%
50+	6	17%

Job Roles

Of the 35 women identified as working for a game development company, four currently work in a non-game creation capacity in administration and marketing roles (although all four have tertiary qualifications in game development and have worked as game developers at some point (refer APPENDIX E - Phase 3 - WiG Survey Results)). Twelve women work as Game Designers, eleven identified as working in a 'creative' role which includes Art, Audio, 2D graphics, 3D modelling and animation, the remaining eight women identified themselves as 'technical', working as testers or programmers.

What area do you mainly identify with?

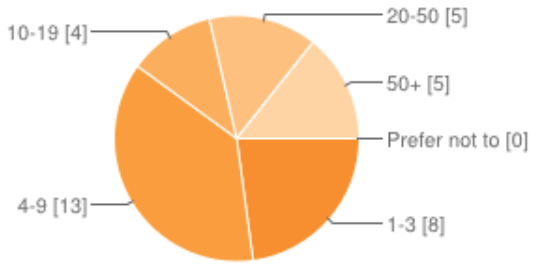


DESIGN	12	34%
CREATIVE	3	9%
3D	7	20%
AUDIO	1	3%
TECHNICAL	7	20%
QA	1	3%
MARKETING	3	9%
ADMINISTRATION	1	3%
Other	0	0%

Studio size

Less than 40% of game studios employ more than 10 staff, and typical of the recent influx of small indie teams, sixty per cent of game studios comprise of teams of less than 10 people, with the bulk (37%) employing between 4-9 staff.

Total number of staff in the company?



1-3	8	23%
4-9	13	37%
10-19	4	11%
20-50	5	14%
50+	5	14%
Prefer not to say	0	0%

Background and education

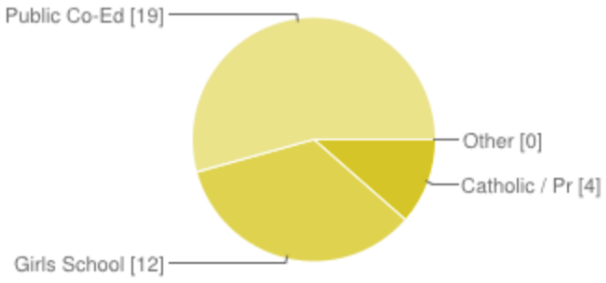
All but two women grew up in Australia

Did you grow up in Australia

Yes	33	94%
No	2	6%
Other	0	0%

More than half of women attended public schools, and just over one-third went to an all-girls school, with the remainder attending private co-educational schools.

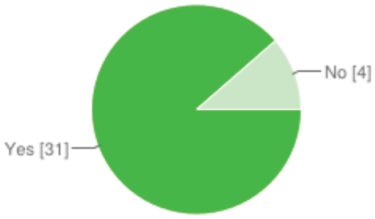
What type of high-school did you attend?



Catholic / Private Co-Ed	4	11%
Girls School	12	34%
Public Co-Ed	19	54%
Other	0	0%

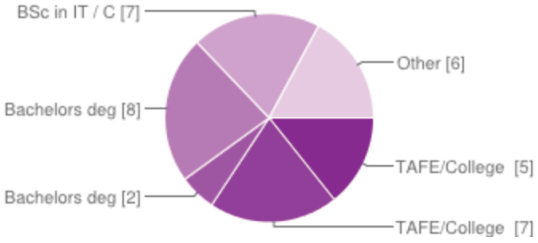
Almost 90% of women surveyed have a game-related tertiary qualification.
(The remaining 11% have tertiary qualifications in other fields – refer APPENDIX E - Phase 3 - WiG Survey Results)

Do you have a tertiary qualification (or are you currently studying a course) that relates to your role in the games industry?



Yes	31	89%
No	4	11%

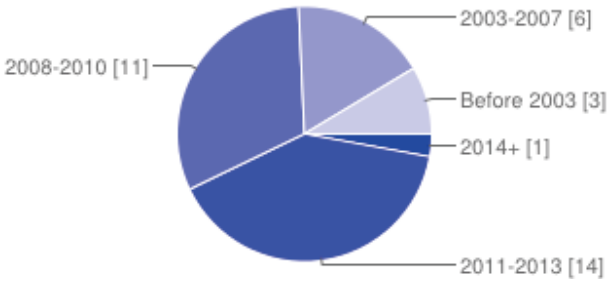
What type of qualification did you obtain



TAFE/College diploma - Graphics/Animation	5	14%
TAFE/College diploma - Game Development	7	20%
Bachelors degree - Graphics/Animation	2	6%
Bachelors degree - Game Development	8	23%
BSc in IT / Computer Science	7	20%
Other	6	17%

Almost three-quarters of women received their degree within the past 5 years, with the remaining quarter obtaining their qualifications prior to 2008.

What year did you (or will you) complete your qualifications?



2014+	1	3%
2011-2013	14	40%
2008-2010	11	31%
2003-2007	6	17%
Before 2003	3	9%

6 : FINDINGS

6.1 The women who make games in the Australian DGI

6.1.1 Is there are typical female game developer?

Childhood

Each interview started out by introducing one another, explaining the researcher's background and connection to the subject matter, getting some background on the respondent, starting off with what they like as a child, asking them to describe themselves, their family background, and interests. Many enjoyed literature, fantasy and anime and while some liked sport, most avoided athletics altogether, a couple were social and outdoorsy, whilst a few admitted that they were tomboys. This all sounds typical of a young girl growing up in Australia. However, within the first minute, a theme emerged. As much of the literature that was reviewed discussed stereotyping and its negative implications and impacts on women game developers in particular, it was surprising how stereotypically similar many of the women who have eventually chosen to work in the digital games industry, actually were as kids.

Self-described as a nerd[10], an introvert, a bookworm, often liking anime, hating athletics, and someone who didn't mind their own company as a child, and above all, they were avid gamers starting from age 7 to 11 after they got their first PC, console or handheld. From then on they were hooked. At school, they were above average students who like science and technical subjects and who tried hard and liked to please their parents and teachers. Not all of them knew at a young age that they would go on to make games.

> *I wanted to work in gaming after I abandoned my first career choice (astronomy) at the age of 10.* (KAL2)

As an adult

Unlike many male programmers who self-identify only as a programmer, those women who work as game programmers, consider themselves more *versatile* – as being '*both techie and creative'* (SOM3) – being able to '*program "creatively" (as opposed to coding banking software*' (SIJ1), yet also being able to design games and make art and game assets. Many taught themselves how to *code*, *mod*, *3D model* and *animate* in their spare time.

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10 *Italics denotes words that more than one respondent used this term during their interview*

> The difference between IT students and Game Dev/Design students (Bayliss & Bierre 2008) game development and design students seem to emphasise the importance of expressing creativity in programming when compared to IT and computer science students.

6.1.2 Playing games

As an adult, they all still enjoy playing digital games, however not to the same degree as they did when they were younger when they preferred to play AAA, RPG, MMO, RTS, with games. Those that have a partner say that they actively play games together – or else, make games together. But apparently life does have a habit of getting in the way, so these days most of these women play casual games on their phones and online. Not because they prefer them, but more so because they don't have as much free time, and casual games allow you to play them in small bursts.

> *"Having a family doesn't leave as much time as I once had, so I don't get to play as often as I once did."* (MAM3)

As a child though, unlike boys who like to play alone in their room, these women all have fond memories of playing video games with their *brothers*, *uncles*, *neighbours* or *cousins*, with most attributing a brother for having 'gotten them into games' in the first place. This most marked revelation was the influence of male siblings as far as their interest in playing games was concerned, which is in keeping with Chaika's (1996) claim that 'The actual consumer market for games for girls, then, may be fathers and brothers, and not the girls themselves. Since girls are frequently not choosing which games they play, producers cannot easily market games for them'

> "*Our parents treated me and my brother the same when it came to toys. We played the same video games and preferred to play with Lego together rather than him play with trucks, and me play with dolls*" – (MAM3)

6.1.3 Childhood influences

Applying the Grounded Theory approach, a new pattern started to emerge, and so it was necessary to deviate from the set of planned questions and enquire further about the influences of siblings they grew up with and in particular their birth order. Estranged or much older siblings were of no consequence, but two respondents said they were from an only-child family, three women were the eldest of two – the younger being male in each case, and the remaining five respondents, were either the middle or youngest child

who only had the influence of older and/or younger male siblings. Only two of the ten women interviewed had sisters, but in both cases, their sisters played no part in the respondent's life whilst growing up, as both were absent (one a step-sister and the other had already moved out of home by the time she was born). Essentially, none of the girls had the influence of a sister whilst growing up.

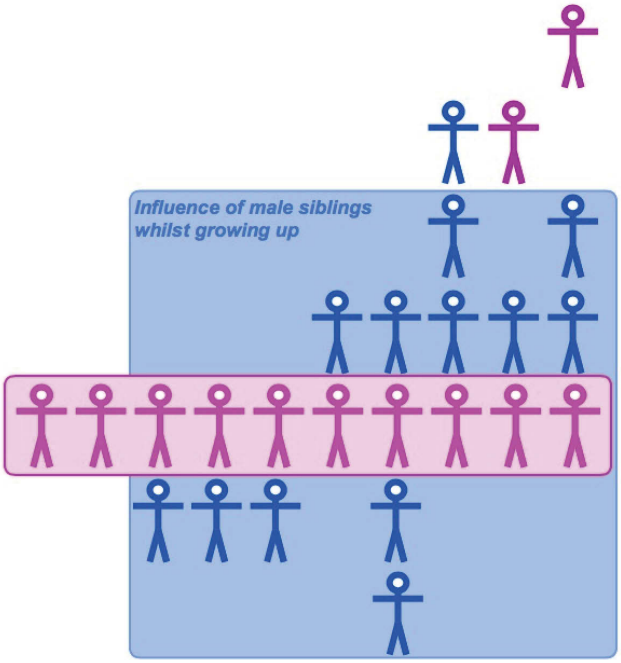

Figure 39 - Birth order and influence of siblings of interviewee respondents

6.1.4 Parents' education & influence on career choice

As Adya & Kaiser (2005) state, 'Students with parents who have tertiary qualifications manage to defy gender stereotyping' with regard to career choices. Supporting this claim, just over half of the respondents have parents that came from a science or research background with more than one-third who have PhDs. Only two respondents have parents without any tertiary qualifications.

In keeping with previous research, it has also been indicated that strong father figures in 'intact' families exert influence on their daughter's career choice. Not that they suggested their daughter works in games, but certainly the fact that almost all respondents admitted to loving *science* and *technical subjects* in high school it was no wonder they progressed onto Computer Science and subsequently game development at university.

Similarly, those women who came from single-parent families stated that their mother was their role model and their 'most staunch supporter' (AIA2) who has shaped them into the person they are and that they aspired to be like their mum.

Despite friends and extended relatives having misgivings about their choice to enter the DGI, respondents overwhelmingly said that they had the support and backing of their parents.

> *I recall my Uncle asking whether there's any money in it. I think that is the main thing most people think about. They probably think it's a young person's game and that it's hard to imagine someone in their 40's still making games in the future. (SIJ1).*

6.1.5 Role models

When it comes to role models, the two women from single-parent families said that their mother was their biggest role model and another respondent mentioned a female game developer, Sheri Graner-Ray, who she said is a 'very brave woman'. For the rest, it was either their father, or some other male from a creative background such as game design, art or writing.

> *[My boyfriend and I] both look up to him (John Romero) and would like to think one day we could be as influential in games as he has been. – (GAA2)*

6.2 Participation at University

All ten of the interview subjects have at least one tertiary qualification (some several), and all of them related to their job in the digital games industry. This does not seem unusual at all for women in the Australian DGI as every single one of the 35 respondents of the *Aussie Women Game Developers Survey* have tertiary qualifications, and 31 of them specifically related to game development.

Half of the respondents majored in programming at university, with the remainder concentrating on Game Design, Game Art and QA, though the programmers also considered themselves creative, saying they like to dabble in graphics as well as code. Similarly, half of the artists said they program – but just that they consider themselves '*pretty rubbish at it*' (AIA2) even though they don't mind programming sometimes. Despite

enjoying programming subjects at university, many of the women commented on how as a programmer they were not taken seriously by their male peers, yet later on when they started work they had no problems at all with their co-workers. This harkens back to the previous comment that male students believe that speed, rather than quality of code is a measure of their ability (Irani 2004).

> *When I was at Uni I had a few guys that would have pissing competitions about code, but now I am pretty confident as a coder and even my art is pretty good, or at least acceptable.* *(MAM3)*

6.2.1 Low participation at Uni

Compared to students in the Arts and Design faculties, the rate of female students dropping out of IT courses is higher and has been cause for concern for many universities. Most respondents commented how in their first year there were anywhere up to 15-20% of females in their classes (higher in non-programming subjects), yet by the time they were in their final year they were the only one left.

Three of the respondents mentioned that before finally settling on enrolling in their game development degree and eventually graduating, that they had previously enrolled in university straight out of school, but subsequently dropped out. At the time they put it down to a number of factors including, *not fitting in*, *feeling overwhelmed* and *not being able to keep up* or *get the help they required*, and that *classes were not being taught in a way that they could grasp*, and perhaps more so, they felt they were too young to start university at that time and were *unable to cope or combine their studies with other commitments*. Within two years though, they had re-enrolled and eventually graduated with Distinction averages. They put it down to just *not being confident at the time*. It is by no coincidence then that, each one of these factors was also mentioned in Roberts (2012) "*Attrition from Australian ICT degrees: why women leave*".

A prominent and recurring issue that almost every female seemed to experience at university was males challenging them and undermining them if they were put in charge of a team. Many women seem to believe that with 'weaker' females, this could contribute to why some other women drop out. When the researcher asked why they didn't decide to dropout themself, they said that it was easier to *step aside* or *take a backseat* – they were used to '*sucking it up and just getting on with the work instead of fighting'*.

I was put in charge of a team. I had a problem with one of the guys who refused to take on-board anything I had to say. It was really tough going as he tried to get others to side with him. In the end, I backed down and got someone else to take over the lead. They still implemented everything as I had planned, but I didn't have the aggravation of playing politics with this guy. I just got on with my work. Afterwards he treated me fine and we get on okay now. I just think he had a problem because I was the only girl on the team and I was put in charge. Looking back, I think guys at uni are stunted socially – but at work later on they turn into normal human beings. (SIJ1)

There were some problems. When I was put in charge of a bunch of guys. The older guys didn't like having a girl telling them what to do I think. I would have much preferred to take a backseat. Less hassle that way. (SOM3)

When I was lead, I was questioned more by both girls and guys. It was frustrating like it was ingrained subconsciously for people to challenge my every decision. In the end I stepped down because it was too stressful and I took a backseat role. I still had control of my work but wasn't as scrutinised as much. (KSS2)

A couple of guys didn't want me in their group. One guy was particularly strong and had a lot of influence with the others. I'd worked with him before. It took him 14 weeks before he said I was doing a good job and realised he was wrong. Now he sings my praises. (AIA2)

6.2.2 Teaching style

A higher than expected number of respondents all attended the *Academy of Interactive Entertainment*, a college, which has campuses in Sydney, Melbourne and Canberra. All remarked how much they enjoyed their course and the way it was taught. They believed before they enrolled, that it was '*not as competitive'* as a university course and provided more *face-to-face with fellow students doing group-work* and *more one-on-one time with teachers who were around when they needed help*.

I chose AIE based on their reputation. Also, I'm not sure any of the Uni's here had a game degree on offer. AIE is super hands-on without the essays and stuff that you get at Uni which appealed to me greatly and meant more time dedicated to making games than writing essays. – SIJ1

Again this type of learning environment fits with findings from a recent Australian study, "*What students are telling us about why they left their ICT course*" (Roberts et al. 2011), where it was reported that 'Small group activities provide students with opportunities to undertake more active learning, addressing the boredom issue' (Schweitzer & Brown 2007), it also 'reduces the likelihood of students feeling disconnected from the teaching and learning environment, and makes it easier for them to ask for support when they need it' (Roberts et al. 2012).

Conversely those who completed there degree at a traditional university complained about how working with guys was frustrating, as team-mates would never meet up outside of class times to do group work assignments and leave everything until the last minute. They mentioned how they wished there was more 'enforced' class time[11] to work on projects together.

> *Once classes were over, guys in your team never wanted to stay back and work on out games, they would just piss off and you wouldn't seem them until 10 minutes before the next class. SO infuriating! (GAA2)*

> *I feel there should be some focus on group dynamics and how to solve problems together rather than allow teams to unravel and ultimately fail. (SOM3)*

> *The most important thing I think they forget to teach you is how to work in groups. Not just how to make a game as a team - but HOW to work in teams together. (KAL2)*

6.3 Working in a digital games studio

6.3.1 Perceived stereotypical game industry culture

Although the design of the *Aussie Women Game Developer* interview was mapped out in a chronological 'life-journey' order; from childhood to primary school, to high school, to university, work and beyond, the one area that the researcher wanted to 'cut-to-the-chase' on was the most worrying and controversial aspects that arose from the

[11] *The contrast between how university and college courses are conducted is that university subjects have around 6 hours active teaching (tutorials) per week, whereas college involves 13 hours of hands-on classes per week. (Refer* Figure 46*)*

literature review, mainly the so-called 'hostile work environment' (Tapia 2006), and how women were being treated in the ADGI.

Because of the predominantly masculine culture in digital games which is perceived as non-inclusive, that supposedly tolerates discrimination, patronising behaviour and sexual harassment, (Australian Government 2013c; Hills 2013; Geneve 2013) it is believe that this is one of the defining reasons why working in game development is perceived to be a challenge for women. As Whitney Hills an American game developer in her recent blog article, *Games! Girls! Onions!* wrote,

> '… discouraged, and isolated by various forms of discrimination…. You feel lonely, you feel like a novelty, you feel like a fraud' (Hills 2013)

Margaret Robertson, a game designer and previous editor for EDGE and Wired magazines speaks on behalf of many women in the DGI when she says,

> A big part of why I don't post things like this is because I'm *scared*. Actually scared. Actually worried that I'll terminally undermine my credibility. And that's because the degree of abuse you can attract is of a different order from the generality of internet rough-and-tumble (Robertson 2011).

A word from the researcher…

When I first embarked on this research, the most worrying issue I came across in the literature was the level of sexism and harassment in the industry. Many of the articles I read in the very beginning emphasised this as being the one, if not the main reason, why women shy away from choosing game development as a career. So naturally, as a female who is part of the Australian DGI community and looking on from the sidelines was wondering whether I should change career paths. I was concerned when I first started out. I had misgivings that I would alienate myself and be labelled as a man-hating bra-burning feminist, when all I wanted to do was to find a way to get more women to come on board and see what a great and rewarding career digital game development can be. Like Margaret Robertson, I was scared.

However, despite Australia's apparent close ties culturally with the US it appears though, at least in the workplace that many of the issues reported in articles from the US, such as the prevalence of discrimination, harassment, sexism and typical male behaviour was not at all an issue raised by any of the ten respondents. That's not to say

that it doesn't happen, as Trauth (2002) said that women might just become inured to such behaviour. Or possibly it may be due to the way Australians view work, how employers view employees, or even due to our more stringent workplace laws, that much of this 'nasty stuff' is not an issue in the workplace in the Australian DGI.

> *In our company culture, I don't think women are treated any differently. It is not something I have come across. We all just want to get our work done.* – *Aussie Women Game Developer survey respondent working in Admin (Melbourne)*

> *I've never personally experienced any sexism or harassment. Some guys though are awkward and can make inappropriate comments or worse, apologise every time, which makes me remember I'm a girl. Like when I first started they would make a big deal about having to hide the porn drive. But really it's not an issue it happens outside of work too. (HMC3)*

> *Inappropriate behaviour was not always handled properly at Uni, but at work I have never had a problem. Except when I first started there was suggestive artwork, which was soon removed. (KSS2)*

> *We have had a few women come and go in our company, but not that many. I find the issue is not discrimination, but more of a lack of interest from female applicants. The last time we advertised for a graphic artist we had over 50 applicants and not one of them was a woman.* – *Aussie Women Game Developer survey respondent working in Admin (Melbourne)*

6.3.2 Workplace conditions

From an industry perspective, it was of concern to learn about undesirable working conditions experienced in the ADGI, as this was quite pronounced in literature and on the Internet. The researcher was interested to see whether things had changed since the Team Bondi era (particularly between 2009 to 2011), and the fiasco about the long work hours, issues with poor pay, no overtime, and the general treatment of employees. This research is in no way dwelling upon the past, but in the absence of any similar issues being reported, is using the Team Bondi example as a baseline for Australia.

Not family-friendly

For women working in games there is a perception that having children is considered a

constraint (Graner-Ray 2004). Due to long hours put in during "crunch time", the digital games industry makes it difficult for women to take time off to have a baby or switch to part-time hours to raise young children. Fortunately, unlike America, we do have maternity leave, but often in small indie companies, they cannot afford it so women are consciously making that choice before planning a family. Most women admitted that they entered the DGI with their eyes wide-open. Eight out of the 10 women interviewed though are single and have no kids. The other two women started their families after they entered the DGI, and took a break between jobs. Having a spouse who is understanding of the demands of the industry is important and every one of them said that they either met their partner through gaming or programming.

Most of the women are at the age where their career comes first and the thought of marriage, family and kids is a long way off, so issues such as workplace conditions did not appear to be on their radar when they initially applied for their jobs. Though most said that the conditions where they currently are good,

> *There's a lot of family support, so if I need time off to attend to family stuff, they're fine with it. At the moment I'm only working 4 days [a week] for the moment, but I can ramp back up.* (MAM3)

But this has not always been so.

Crunch

Between 2009 and 2011, five of the ten women were working for AAA companies. All reflected back to things being "not so nice" during what one referred to as a "tumultuous time" in the industry due to a number of business factors – the main one being the impact of the GFC on the industry in Australia. One industry veteran commented how when the studio was so much smaller it was more fun, more intimate, and family-like. However, when the company she worked for grew to over 100 staff in a very short timespan, the whole dynamic changed and it became more like an impersonal factory churning out games. Crunch time then was de rigueur.

> *I don't want to go into it, but it basically crunch caused the demise of the place. That was years ago. I worked 7 days a week for about 2 years back in 2009.* (SON4)

> *Three years ago I was working 16-hour days for months on end then the project was cancelled. It was so deflating. All accrued overtime in lieu was lost. That is, we were all screwed. Things have changed a lot in the last 2-3 years. People have*

> *started to realise that there are diminishing returns from working your staff in to the ground. But there are still some guys that think that it's the ONLY way to work. Not me. I think it's poor planning. (S0M3)*

> *Crunch time was the norm, almost every day - not the exception. It was always crunch time. Time off in lieu was meant to be in place, however they would discourage you even thinking about taking time off. (KAL2)*

Prior to that companies were recruiting people from all over the world so they could get projects shipped on time, and it seemed not long after that, then they were laying everyone off. *Morale* plummeted. Oddly, it was the women who left first. Something about not wanting to be around *when the ship went down*. However, two of the women explained that their partners stayed until the end because they wanted to make sure they got their name in the credits[12] (Parker 2011). The fallout as far as women were concerned was that ultimately many left the industry, or headed overseas to work in games (but in more conducive surroundings), or started their own game development company. A fact that contributed to the researcher having to undertake the four-phase approach for this thesis in trying to relocate a whole new group of women to interview after the original group that had been identified in 2011 had left the industry.

> *Not now that I work for myself. We set realistic deadlines and pretty much try to stop work before dinner and not work beyond that (S0N4)*

> *It's one of the reasons why I started my own business. If I'm going to be working 12-hour days I don't want it lining someone else's pockets (S0M3)*

It seems though that the landscape in the ADGI has changed somewhat over the past 3-5 years, where once working conditions were far from acceptable, nowadays teams are more balanced and that work is '*more fun and less crunch*'. These days' women are happy to report that most work from 9-5. If they do work back later then it is either because they want to - not because it is expected. Like every job though, occasionally there will be something urgent the next day that needs completing the night before. It is not as if it happens every day, or for weeks or months on end like it used to.

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[12] According to IGDA's Game Crediting Guide, any person, contractor, or employee who has contributed to the production of a game for at least 5 per cent or 30 days (whichever is least) of the project's total development cycle must be credited (IGDA 2007)

On the bright side, women were quite happy with the perks of their jobs with the number one perk being, '*getting to work on really cool games', 'getting to work with cool, likeminded people who have the same end-goal'... 'We probably share more common interests than other jobs*'

Pay Disparity

Surveys conducted by *Game Developer Magazine* report that women worldwide earn between 10%-20% less than their male counterparts (Game Developer Magazine 2013). To date in Australia though there are no official statistics that indicate that the same is happening here.

Apart from those women who own their own game companies (for whom, in the beginning, like most fledgling businesses, try not to pull a proper wage), the topic of pay, or rather pay disparity between work colleagues does not seem to be an issue that any of the women brought up. It is either not a problem or just not on their radar. Similarly, mentioning of the 'glass ceiling' also brought no response. Perhaps this is because in smaller studios in Australia there is less of a hierarchy, and promotions and remuneration is understood not to be a priority.

Two to three years back there were several AAA studios that were being accused of exploiting junior staff who were '*being treated like cannon-fodder*' towards the end of a project near shipping, apparently with the expectation that these young and inexperienced staff (both male and female) were willing to work ridiculous hours' - up to 80 hours a week for minimum wages and no overtime.

> *I suspect I was getting paid less, but I didn't care as long as I knew I was getting my name onto a AAA title. (GAA2)*

6.3.3 It's a not a proper career

Even though the skills required to work as a digital games developer are similar to that of an IT professional, most parents will argue what's the point of spending three years at university when the chances of having a successful career in the digital games industry is slim, not to mention, not exactly respectable. The perception that many people have is that it is not a *real job* (Penny Arcade 2013, p. 1). Thankfully, most of the women reported that they received a lot of support from their immediate family for their career choice; however, some parents and many 'outsiders' still see working in the ADGI as a very risky career move.

> *For this generation being competitive and ambitious to 'get-ahead', gaming is not seen as practical and is not considered a 'serious' job at least as far as my parents are concerned. Still, they never tried talking me out of it.* *(HMC3)*

> *I recall my Uncle asking whether there's any money in it. I think that is the main thing most people think about. They probably think it's a young person's game and that it's hard to imagine someone in their 40's still making games in the future.* *(SIJ1)*

6.3.4 Has there been a decline in the number of women participating in the ADGI?

The ABS reported in 2012 that the percentage of women in the ADGI was 8.4%. Even with the preliminary estimates from the census that was conducted for this thesis, it appears that there are between 13% and 16% women currently working in the industry. This concurs with feedback from interview respondents who confirm that they have not seen a recent decline in the number of women at their place of work. This corresponds to the fact that five years ago, studios were much bigger and each had only a few token females. Now those same females are working in much smaller, but across many more teams, and therefore actually have more influence within the Aussie games industry now.

Additionally, there are more women game studio owners in Australia now than ever before. Although there are no previous official statistics, many of these women are long time industry veterans who once worked for one of the many larger AAA companies and rather than leave the industry when their employer closed down, instead started their own business. (Refer Figure 40)

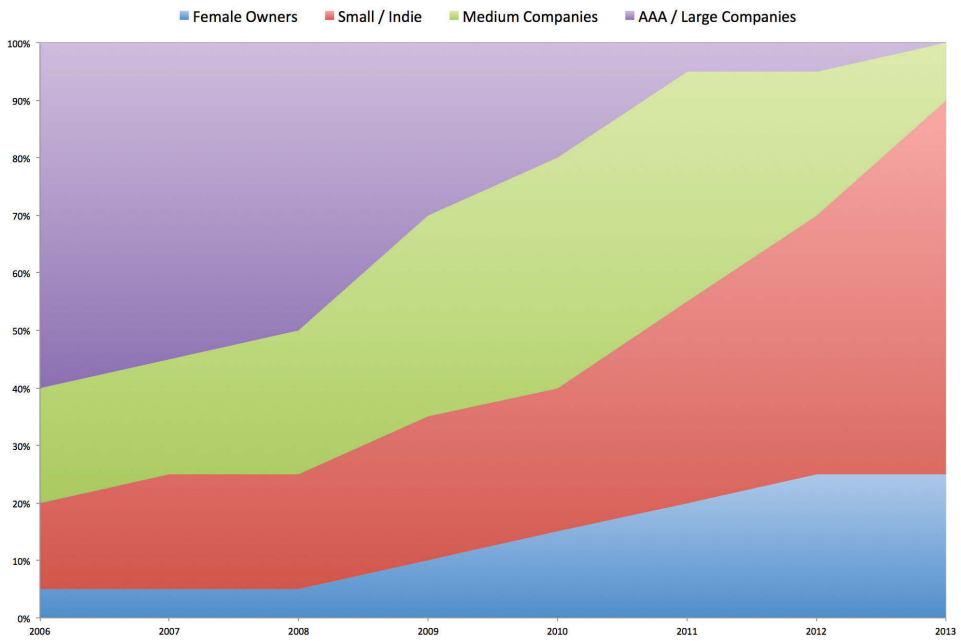

Figure 40 - The trend of where women in the ADGI are working

6.3.5 Isolation

A theme that runs from university to working in the industry is one of isolation for women in digital games, so it was of interest to discover that seems to be of little consequence. The one question where overwhelmingly every woman answered identically was, "Do you, or have you ever felt outnumbered at work?", where they all responded with a resounding 'No!'

> *No, not at all. Although I am the only girl in a team of 9, I've never felt outnumbered. And I've never witnessed or experienced harassment. I think that it has helped that I have always had good male friends. I think the team considers me as one of the boys, though I am probably awkwardly in the middle of the spectrum of a girlie-girl - but not prissy. (AIA2)*

6.3.6 Lack of information

Many women concur that more women – who may already be qualified to work in the industry – coming from neighbouring industries such as Advertising or the digital content industry (DCI), yet because of a lack of information about the ADGI would not even conceive that the industry exists in Australia. The perception for many people is that most games are made overseas in the US, so it would not occur to other women to

consider applying for jobs that they are not aware even exist. Likewise, students from related disciplines – even Computer Sciences often do not know that there is a pathway for them into the industry.

> *I didn't know a Computer Science degree could lead to game development (FOR2)*

6.3.7 School, teachers and career advisors

Almost all the women agree that schools could be doing a lot more as far as encouraging young girls into game development, IT and other male-dominated industries. This is particularly true in all girls' schools.

> *I went to an all girls' school. There were no computer subjects so I doubt they would even know there was such a job. (FOR2)*

> *I suspect they would have tried to change my mind. Seriously, I doubt they would even know there was such a job. (KAL2)*

> *I'm quite certain they would not have suggested games to me, and sure that they would not know where to point me either if I asked. (KSS2)*

> *Career advisors would definitely have steered me in a different direction. Though they would have encouraged guys. My maths teacher was shocked when they heard I had completed programming. (SOM3)*

> *No way! They would probably have tried to steer me towards being a doctor or solicitor or vet. I went to a conservative - catholic girls school where 'male' vocations were not on the radar. They did have a multimedia course but it was cancelled, as the teachers could not 'sell' the subject to students. If only they made it more exciting and interesting. (AIA2)*

6.4 Summary of Findings

The following is a summary of comments made by, or factors that affected the majority of women game developers who were interviewed in this research.

- Young girls shared similar traits and interests
    - Nerdy, introverted, shy, bookworm, non-athletic
    - Excelled at school
    - Passionate about playing games
    - Anime, art, literature
    - Taught themselves coding, modding, 3D
- Grew up without any female sibling influence
- Were introduced to digital games by their male siblings.
- Parents had tertiary qualifications
- Many fathers were scientists or researchers
- Fathers influenced their career choice, and in single-parent families, their mother is their role-model
- Outside of their family, their role-models are predominantly male game developers, artists or authors
- Considered themselves both 'techie' and creative – able to both program and create game art
- Believe that only the 'strong' make it through university
- Having confidence is a key factor
- Understand why other women drop out of university, due to;
    - Males not taking them seriously as programmers
    - Males refusing to take instruction from females in charge
- That often by 'sucking it up' and 'taking a backseat' that there's less of a headache dealing with males in group work at University. 'Eventually the guy will come around'.
- That teaching should be more hands-on and collaborative and that there should be more 'enforced' group-work time
- That school teachers and career advisors need education about game development
- That there is a general lack of information about the industry
- That sexism and discrimination are not a problem in the workplace in the ADGI
- Crunch is almost non-existent and that many places are offering flexible work conditions

- Pay disparity and the glass ceiling may exist, but it is not a major issue to women in the industry
- Women prefer and like this new 'indie phase'
- That women are owning more game development companies now than ever
- Understand that working in games might not be for everyone, but that if young girls were exposed to, and given the opportunity to learn how to make games, they would be more likely to pursue game development when they are older.
- You have to be 'the type' (be passionate, love games, love making stuff)

7 : SUGGESTIONS FROM WOMEN IN THE INDUSTRY

Girls need empowering. Teach them games in primary school

One of the consistent comments made by the interview respondents is how they believe young girls need to be empowered well before they get to university. Perhaps it harkens back to when they themselves were at school and how they recall their own difficulties.

I think young girls need to know they can do stuff. Also letting them know the industry is there is a good start. Most think that all games are made in America. Teach them how to mod and make levels. My boyfriend did it on his own when he was young and I would not have thought it was possible for me had he not been around. *(GAA2)*

I think that a lot of girls sell themselves short. They actually need a verbal kick up the arse. They need to know what being passionate about something feels like. Guys are pushed by their families, perhaps because men are still expected to be the breadwinners, so a lot of girls just sit back. I think a lot of families are to blame as to why girls are apathetic, unambitious. They need to be stronger. Girls need pep talks to make them less complacent. *(KSS2)*

Lot of girls underestimate their ability. Girls need to be encouraged. It's too late at University. We need to start encouraging girls in primary. *(SIJ1)*

I definitely would encourage all girls in primary. But I realise it's not for everyone. Not everyone is interested, but lots of girls probably would never know they're interested because they've never been given the opportunity. I think you have to be 'the type' though. *(SOM3)*
Researcher: What do you mean, 'the type'?
I mean, into games. Like nerdy - creative - passionate about games and just making stuff. And not ever being put off by what other people reckon, or to give up on your dream. *(SOM3)*

Changes need to be made to when kids are really young and how they engage with games. I want my daughter to have more opportunities that give them confidence in doing things that for males is natural. *(MAM3)*

*If little girls want to play games - they should be allowed to play games - not just *girlie* games, but also games that traditionally parents would give to boys. There should be more career days during primary school - that focus on industries that are male dominated Getting girls into games early would empower them (so that they are not considered john-come-latelys). This would help with sexism in games - "Get them when they're young"* (AIA2)

And later in high school and university

It's considered nerdy & weird (the pimply-faced teen boy in his darkened bedroom) and if people actually saw what was involved they would be pleasantly surprised and may even sit up and take notice. Expose them to the broader options in games. Most people imagine that it's all about programming and even though programming is cool, they should be shown other areas like audio, music, sound, art, user interface, modelling (SOM3)

Computer Science and Game Development should be taught in high school, not just to prepare kids for uni, but because learning how to program and to make games gives them a lot more skills that crossover into other areas. (HMC3)

Women can be encouraged through initiatives in university, specialised course offerings as well as some 'meet the developer' panels where women can get advice from other women that are already in the industry (KAL2)

Yes! And girls should know that they don't necessarily have to work for a male boss (though they're not bad), they just need to know that owning their own studio IS POSSIBLE. For instance in your survey on Women Game Devs, the questions kinda skew towards employees and not people who run their own companies like myself and the women I know. So we need to change people's mindsets. (SOM3)

8 : CONCLUSION

"Are there specific factors that continue to ensure women are underrepresented in the Australian digital games industry?"

This research addresses gaps in local literature on the Australian digital games industry, by presenting multiple sources of empirical data collected about Australian women who work as game developers through surveys and interviews. The findings reveal a range of influences.

On one hand, participation is low – a lot lower than in the ICT industry, and lower than women participating in the general workforce. However, figures from data collected during this research indicate that the percentage of women in the Australian digital games industry has actually increased. Rather than any changes specifically affecting women, this is largely due to the recent growth in the industry from up and coming smaller indie studios that have sprouted up around the country over the past two years.

Negative factors such as the perceived work culture stereotype may still exist overseas, but to those women working within the ADGI; this does not appear to be a problem for them. Likewise, inflexible workplace conditions, pay disparity, and long work hours also do not appear to be compelling women to leave the industry.

It all comes down to the pipeline issue of getting more women interested in doing game development and IT degrees at university. Where clearly there are issues that prevent women from wanting to enrol. These mainly revolve around a lack of interest and how tertiary courses are taught, in that the teaching environment does not suit women's collaborative and more social learning styles. Similarly, being a minority in a male-dominated environment, one of the factors that contribute to women dropping out is attributed to the way male students treat female classmates in first-year, which may stem from a lack of confidence coming straight out of high school. Fortunately, this does not persist into industry, but the damage is already done.

Von Hellens claims that many women are socialised into the game industry culture, by developing coping strategies in an attempt to fit into this male domain (2001, p. 101). This may be true to a certain degree, but it seems more plausible that women who choose to pursue a career in the ADGI are actually a unique breed, 'a specific type of woman', who is predisposed to eventually work in games.

Trauth (2002) maintains that women who pursue IT are '*powerful people: forthright, strong, driven, ambitious, mathematical, less social than other women, logical and competitive*'. Similarly, women who choose to be game developers, also have their own set of unique characteristics. Despite coming from very diverse locations, age groups, schooling and socio-economic situations, from a young age they all possessed very similar personal traits, abilities and interests. Furthermore, they also share the influence of strong parents, More importantly though, they were introduced to playing games from a young age by a male relative, which may have eventually aligned them with the digital game development culture.

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APPENDIX A

Figure 41 - Australia Games Industry Revenue 2006-2012

Source: (Source: Bond University 2009; Darchen 2012; Bond University 2012; Dinham 2013)

SECTORS	GENRES						
	Games for Health	Advergames	Games for Training	Games for Education	Games for Science and Research	Production	Games as Work
Government and NGO	Public health education & mass casualty response	Political games	Employee training	Inform public	Data collection/ planning	Strategic & policy planning	Public diplomacy, opinion research
Defence	Rehab & wellness	Recruitment & propaganda	Soldier support training	School house education	War games & planning	War planning & weapons research	Command & control
Healthcare	Cybertherapy/ exergaming	Public health policy & social awareness campaigns	Training games for health professionals	Games for patients	Visualization/ epidemiology	Biotech manufacturing & design	Public health response planning & logistics
Marketing and Communications	Advertising treatment	Advertising, marketing with games, product placement	Product use	Product information	Opinion research	Machinima	Opinion research
Education	Inform about disease/risks	Social issue games	Train teachers/train workforce skills	Learning	Corporate science & recruitment	Documentary	Teaching distance learning
Corporate	Employee health information & wellness	Customer education & awareness	Employee training	Continuing education & certification	Advertising/ visualization	Strategic planning	Command & control
Industry	Occupational safety	Sales & recruitment	Employee training	Workforce education	Process, optimization, simulation	Nano/bio-Tech design	Command & control

Figure 42 - Serious Games Taxonomy - designed by Sawyer & Smith

(Source: Australian Research Council Centre of Excellence 2011, p. 78)

Census of digital game developers

16 The census of digital game developers included all Australian businesses that generated income predominantly from the development of digital games for a range of formats (major consoles, handheld consoles, personal computers and mobile phones).

17 These units were primarily identified using an external listing of digital game developers provided by industry associations, and supplementary research. The population covers a range of ANZSIC classes as there is no specific ANZSIC class for digital game development. In scope units have been found to be predominantly coded to ANZSIC class 7000 (COMPUTER SYSTEM DESIGN AND RELATED SERVICES).

18 In scope businesses will generally have the capability and staff to develop a digital game from start to finish, but may outsource particular components of a project to other businesses with more technical expertise (e.g. to animation studios). Conversely, these units may also provide game development services to other game developers, rather than developing full game titles on their own. These businesses are referred to as DIGITAL GAME DEVELOPERS throughout this publication.

19 It should be noted that the scope does not include businesses that provide support services to game development businesses, such as animation or sound studios, or businesses that primarily develop gaming machines (i.e. poker machines). Businesses that primarily provide software development services, develop board games or interactive DVD games are also excluded from the scope.

Figure 43 – Australian Bureau of Statistics data collection methodology

(Source: Australian Bureau of Statistics 2013)

2012 Australian Tertiary Enrollments - Digital Game degrees				Females	Males
State	Degree Name	Faculty	Major	271	1,718
NSW	Bachelor of Games & Interactive Entertainment (Study Area A)	IT	Development	64	405
NSW	Bachelor of Information Technology (Games Design And Development)	IT	Development	16	207
NSW	Bachelor of Design (Games)	Design	Design	67	127
VIC	Bachelor of Information Technology (Games & Entertainment Design)	IT	Design	11	109
VIC	Bachelor of Multimedia, Games & Interactivity / BSc. Computer Science & Software Engineering	IT	Development	11	93
VIC	Bachelor of Arts (Games & Interactivity)	Arts	Design	19	87
VIC	Bachelor of Infotech (Games Graphics Programming)	IT	Programming	8	87
VIC	Bachelor of Information Technology - Games Design And Development	IT	Development	3	66
NSW	Bachelor of Games Design	IT	Design	20	61
QLD	Bachelor of Science In Games Development	IT	Development	8	61
QLD	Bachelor of Computer Science (Games Technology)	IT	Development	3	49
WA	Bachelor of Games & Virtual Worlds (Programming)	IT	Programming	3	48
SA	Bachelor of Business (Study Area A) / Bachelor of Games & Interactive Entertainment (Study Area A)	IT	Development	5	45
NSW	B Corporate System Mgt / Bachelor of Games & Interactive Entertainment (Study Area A)	IT	Development	3	35
NSW	Bachelor of Information And Communication Technology (Games Development)	IT	Development	0	29
NSW	Bachelor of Science (Games Development)	IT	Development	5	27
NSW	Bachelor of Arts, Games & Interactivity / BSc. Computer Science & Software Engineering	Arts	Design	2	26
VIC	Bachelor of Computer Games	IT	Development	2	23
VIC	Bachelor of Arts (Games & Interactivity)	Arts	Design	2	20
VIC	Diploma of Game Design	IT	Design	0	18
VIC	Bachelor of Computer Science In Games Technology	IT	Development	2	18
VIC	B. Applied Sc. (Study Area A) / B. Games & Interactive Ent (Study Area A)	IT	Development	6	17
VIC	Bachelor Games & Interactive Entertainment (Study Area A) / Bachelor of Maths	IT	Development	3	15
QLD	Bachelor of Creative Arts (Games Design)	Arts	Design	2	13
QLD	Bachelor of Arts (Visual Communication) - Major Games Design	Arts	Design	2	10
QLD	Master of Games & Simulation Programming	IT	Programming	2	6
QLD	Bachelor of Computer Science (Games Technology) (Honours)	IT	Development	0	5
QLD	Associate Degree of Creative Arts (Game Design)	Arts	Design	0	2
QLD	Bachelor of Arts (Games & Interactivity)	Arts	Design	0	2
QLD	Bachelor of Games Design with Honours	IT	Design	2	2
VIC	Bachelor of Computer Games/Bachelor of Business	IT	Development	0	2
WA	Bachelor of Digital Media in Games Art & Design with Honours	IT	Design	0	1
WA	Bachelor of Computer Science In Games Technology With Honours	IT	Development	0	1
ACT	Graduate Diploma of Games Programming	IT	Programming	0	1

Figure 44 - Australian tertiary courses specifically in game design and development (2012)

Source: List collated from searches made at http://www.whatdegreewhichuniversity.com

Enrolment data was purchased specifically for this thesis from Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education
Prepared by Dr Neesan Chelliah - Data and Analysis Branch - Higher Education Group

Types of Game Development Studios

(Excerpt from http://en.wikipedia.org/wiki/Video_game_developer#Types)

First-party developer

A first-party developer is part of a company, which manufactures a video game console and develops exclusively for it. First-party developers may use the name of the company itself (such as Nintendo), have a specific division name (such as Sony's Polyphony Digital) or have been an independent studio before being acquired by the console .

However, a first-party game is a title, which needs only to have been published by the manufacturer of the console (regardless of who owns the IP of the game)

Second-party developer

Second party developer is a colloquial term used by gaming enthusiasts and media often used to describe two different types of game development studios:

1. Independently owned studios, who take development contracts from the platform holders. What they produce will usually be exclusive to that platform.
2. Studios who are partially or wholly owned by the platform holder (also known as a subsidiary) and what they produce will usually be exclusive to that platform.

In reality, the resulting game is first party (since it is funded by the platform holder who usually owns the resulting IP), but the term helps to distinguish independent studios from those directly owned by the platform holder. These studios may have exclusive publishing agreements (or other business relationships) with the platform holder, while maintaining independence.

Third-party developers

Third-party developers are usually called upon by a video game publisher to develop a title for one (or more) systems. Both publisher and developer have considerable input in the game's design and content. However, the publisher's wishes generally override those of the developer.

Independent developers

See also: Indie game and Independent video game development

Independents are software developers, which are not owned by (or dependent on) a single publisher. Some of these developers self-publish their games, relying on the Internet and word of mouth for publicity. With the advent of digital distribution of inexpensive games on game consoles, it is now possible for independent developers to forge agreements with console manufacturers for broad distribution of their games.

Figure 45 - Types of Game Development Studios

	University		College	
	Passive	Active	Passive	Active
Subject/Topic 1	1.5	1.5	1	2.5
Subject/Topic 2	1.5	1.5	1	2.5
Subject/Topic 3	1.5	1.5	1	2.5
Subject/Topic 4	1.5	1.5	1	2.5
Subject/Topic 5			1	3
	6	**6**	5	**13**

Figure 46 - Comparison of Active (tutorial) hours taught each week

APPENDIX B - Phase 1 – Australian Digital Game Company Database

Company/Studio	State	Current
2 Dudez Studios	QLD	ACTIVE
2 Hit Studio	NSW	ACTIVE - Not Fulltime
26 O'Clock	SA	INACTIVE
2K Australia	ACT	ACTIVE
2and2	NSW	ACTIVE
3 Blokes: A RockYou Studio	QLD	CLOSED & REBORN
3 Sprockets	VIC	ACTIVE
5 Lives Studios	QLD	ACTIVE
5th World Media	QLD	CLOSED
Aberrant Enterprises	QLD	CLOSED
Acheron Design	-	CLOSED
Acid Software	-	CLOSED
Ahasia Designs	VIC	CLOSED
Ample Entertainment	QLD	ACTIVE - Not Fulltime
Angry Pumpkin (now known as Studio Moshi)	-	CLOSED & REBORN
Anomalous Interactive	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Ant Juice (now Rockethands)	-	CLOSED & REBORN
Appliquette	SA	ACTIVE
Ari Levi	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Ark Games (now known as See Through Studios)	-	CLOSED & REBORN
Art of Play	VIC	ACTIVE
Atari Melbourne House	-	CLOSED
Auran	-	CLOSED
Baguet Games	TAS	ACTIVE
Bane Games	QLD	ACTIVE - Not Fulltime
Barrel of Donkeys	VIC	ACTIVE
Beam Software	-	CLOSED
Beermogul	NSW	ACTIVE
Benevolent Interactive	-	CLOSED
Bifrost Studios (Valhalla)	QLD	CLOSED
Big Ant Studios	VIC	ACTIVE
Big Bucket Software	WA	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Big Sprite Games	SA	ACTIVE
Big World Technologies	ACT	ACTIVE
Binary Space	SA	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Bitrave	NSW	ACTIVE - Not Fulltime
Black Lab Games	WA	ACTIVE - Not Fulltime
Blowfish Studios	NSW	ACTIVE
Blue Manchu	NSW	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Blue Tongue Entertainment	-	CLOSED & REBORN
Blunt Instrument Studios	NSW	ACTIVE
Blup Blup Game Studio	VIC	ACTIVE - Not Fulltime
Bombajam	VIC	ACTIVE
Bow Art	QLD	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Brawsome	VIC	ACTIVE
Broken Arms Games	SA	ACTIVE
Brownbot	NSW	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Bruno Rime	TAS	ACTIVE
Bubble Gum Interactive	NSW	ACTIVE
Bungarra Software	WA	ACTIVE
Camshaft Software	VIC	ACTIVE
Cardboard Keep	ACT	ACTIVE
Champagne for the Ladies	SA	CLOSED
Charlie Dog Games	ACT	ACTIVE - Not Fulltime

Company/Studio	State	Current
Clicker Interactive	VIC	ACTIVE - Not Fulltime
Comicorp Worlds	VIC	ACTIVE
Commotion Games	QLD	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Con Artist Games	VIC	ACTIVE
Convict Interactive	NSW	CLOSED
Cooldown Studios	VIC	ACTIVE - Not Fulltime
Crackerjack Games		ACTIVE
Creative Assembly	-	CLOSED & REBORN
Creative NonFiction	NSW	NAGD
Creative Undead	QLD	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Creature Interactive	VIC	CLOSED
Crunchy Frog	WA	ACTIVE - Not Fulltime
Cupco Games	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Curious Bear Productions	QLD	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Current Circus	VIC	ACTIVE
Dancing Dinosaur Games	VIC	ACTIVE
David Coen	VIC	CLOSED
Defiant Development	QLD	ACTIVE
Different Methods	WA	CLOSED
Dime Studios	VIC	ACTIVE
Dimension Frontier	NSW	ACTIVE
Dimsdale and Kreozot	QLD	ACTIVE - Not Fulltime
DinoRoar	NSW	CLOSED
Disparity Games	QLD	ACTIVE
Dog Melon	WA	CLOSED
Donaco International	NSW	NAGD
Dose Interactive	SA	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Dreamgate Studios	ACT	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
DrewFX	WA	ACTIVE - Not Fulltime
Drop Spider Games	VIC	CLOSED
Electric Candy Studios	NSW	CLOSED
Electric Mammoth Studios	VIC	ACTIVE
Electronic Arts Australia	-	CLOSED
Electronic Game Queensland	-	NAGD
Elevator Entertainment	NSW	NAGD
Ellipse Studios	-	CLOSED
End Game Studios	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Entropic Entertainment	WA	ACTIVE
Envelop Entertainment	NSW	ACTIVE
Epiphany Games	NSW	ACTIVE
Evelyn Labs	VIC	ACTIVE
Evil Aliens	ACT	ACTIVE - Not Fulltime
Evil Genius	SA	CLOSED
Evolution Games	-	CLOSED
EyeCon	QLD	NAGD
Eyst	-	CLOSED

Company/Studio	State	Current
Ezone	WA	ACTIVE
Farbs Farbs Farbs	ACT	ACTIVE - Not Fulltime
Fat Woods	VIC	ACTIVE - Not Fulltime
Fiasco Studios	VIC	CLOSED
Figurehead Studios	VIC	CLOSED
Fire Monkeys	VIC	ACTIVE
Firemint	VIC	CLOSED & REBORN
Flat Earth Games	NSW	ACTIVE - Not Fulltime
Floating Man Games	NSW	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Floating Man Games	NSW	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Floor	-	CLOSED
Flyleap Studios	VIC	ACTIVE
Foolhardy Games	VIC	INACTIVE
Foundation Games	NSW	INACTIVE
Fragsoft	WA	CLOSED
Fraktalvoid	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
FreshTone Games	QLD	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Frosch Media	NSW	ACTIVE
Frosty Badger	WA	ACTIVE - Not Fulltime
Fun Burger	-	CLOSED
Fun Mob Games	QLD	ACTIVE
FuseBox Games	NSW	INACTIVE
FuzzyEyes Studio	-	CLOSED
Fuzzyeyes	-	CLOSED
Gamers Heart	VIC	CLOSED
Games Lab	NSW	CLOSED
Games for Gummie	VIC	CLOSED
Games for Soul	WA	CLOSED
Garoo Games	NSW	ACTIVE
Ghostbox	QLD	ACTIVE
Gnomic Studios	WA	ACTIVE - Not Fulltime
Goat Leap Studios	VIC	ACTIVE
Good Game Productions	VIC	ACTIVE
Grapple Gun Games	VIC	ACTIVE
Greenhill Games	NSW	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Gridwerks	-	CLOSED
HAB Studio	NSW	ACTIVE
Halfbrick Studios	NSW	ACTIVE
Handwritten Games	WA	ACTIVE - Not Fulltime
HardCover Entertainment	-	CLOSED
Headsoft	WA	ACTIVE - Not Fulltime
Hibana	WA	CLOSED
Hitbox Team	QLD	ACTIVE
Holopoint Interactive	SA	ACTIVE
Hungry Sky	WA	NAGD
Hypercube	-	CLOSED
IO Normal	VIC	ACTIVE
Ignition Studios	VIC	ACTIVE

Company/Studio	State	Current
Imaginary Numbers	-	CLOSED
Imagination Entertainment	-	CLOSED & REBORN
Imbue Games	NSW	ACTIVE
Immersive Technologies	-	NAGD
Impossible Boss	NSW	ACTIVE - Not Fulltime
Impromptu Games	VIC	ACTIVE
Indy	VIC	ACTIVE
Infinite Interactive	VIC	ACTIVE
Initials Games	NSW	ACTIVE - Not Fulltime
Interzone Games	-	CLOSED
Intrigue Entertainment	-	CLOSED
Intuitive Games Studios	NSW	ACTIVE
Iron Helmet Games	QLD	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Iron Monkey Studios (joined with Firemint to becom…	-	CLOSED & REBORN
Josh Sacco	-	CLOSED
Jumbuck Entertainment Ltd	VIC	CLOSED & REBORN
KMM Games	-	CLOSED
Kactus Games	WA	ACTIVE
Kawow	-	CLOSED
Kingdom Fruit Studios	VIC	CLOSED
Kixeye	QLD	ACTIVE
Klick Tock Pty. Limited	VIC	ACTIVE
Konami Australia	NSW	CLOSED
Kruger Heavy Industries	WA	ACTIVE - Not Fulltime
Kukan	-	CLOSED
Kumobius	VIC	ACTIVE
LOLgames	NSW	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
LOR Games	QLD	ACTIVE - Not Fulltime
League of Monkeys	VIC	ACTIVE
Level Machine	VIC	ACTIVE - Not Fulltime
Lightmare Studios	QLD	ACTIVE
Lime Rocket	NSW	ACTIVE
Little Gears	QLD	ACTIVE - Not Fulltime
Little Reaper Games	VIC	ACTIVE
Little White Book Tarot	WA	CLOSED
Loveshack Entertainment	VIC	ACTIVE
Lucid Software Design	-	CLOSED
Ludo Digital	VIC	CLOSED
Lycette Bros	VIC	ACTIVE
MUZBOZ	VIC	ACTIVE
Mackdavi	QLD	ACTIVE - Not Fulltime
Man Fight Dragon	VIC	ACTIVE - Not Fulltime
Manic Game Studios	SA	CLOSED
Many Monkeys Development	VIC	ACTIVE
Mark Killey	SA	CLOSED
Melting Moon Games	VIC	ACTIVE
Mesmer Mobile	VIC	ACTIVE - Not Fulltime
Micro Forté Studios	NSW	ACTIVE
Mighty Kingdom	SA	ACTIVE
Mind Splat Design	VIC	CLOSED
Mindscape Asia-Pacific	NSW	NAGD
Minimega	QLD	ACTIVE

Company/Studio	State	Current
Redtribe Games	VIC	CLOSED
RevHeads	QLD	ACTIVE
Robot Circus	VIC	ACTIVE
Rockethands	WA	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Ruma Studios	VIC	ACTIVE
SK Games	WA	ACTIVE
SMG Studio	NSW	ACTIVE
Saito Games	NSW	ACTIVE - Not Fulltime
Sam Whillance	VIC	CLOSED
Sandbox Software	WA	ACTIVE - Not Fulltime
Savage Cabbage Pty. Limited	WA	ACTIVE - Not Fulltime
Screwfly Studios	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Screwtape Studios	QLD	ACTIVE
SealedTech	NSW	ACTIVE
Secret Lab	TAS	ACTIVE
Sector 3	VIC	ACTIVE
See Through Studios	NSW	ACTIVE
Sega Australia	QLD	CLOSED
Shadow Field Team	VIC	CLOSED
Shovsoft	QLD	ACTIVE
Sidereal Entertainment	TAS	CLOSED
Silhouette Studios	VIC	CLOSED
Six Foot Kid	SA	ACTIVE
SmallGreenHill	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Soap Creative	NSW	ACTIVE
Sonic Punch Studio	NSW	ACTIVE
Space Dust	VIC	ACTIVE
Space Gum	VIC	CLOSED
Spinfast	WA	CLOSED
Square Egg Games	WA	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Squish Games	NSW	ACTIVE
Star Play It	SA	CLOSED
Staring Man	WA	CLOSED
Stick Sports	NSW	ACTIVE
StirFire	WA	ACTIVE
Strategic Studies Group	NSW	ACTIVE - Not Fulltime
Studio Moshi (formerly Angry Pumpkin)	VIC	NAGD
Studio Pumpernickel	-	CLOSED
Subversive Games	WA	ACTIVE
Sunrise Games	ACT	CLOSED
Super Furious Software	WA	CLOSED
Surprise Attack Games	VIC	NAGD
Synthetic Nest	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
THQ Studio Australia	-	CLOSED
TOME Studios	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Take 2 Games	-	NAGD
Tantalus / Straight Right	VIC	ACTIVE
Tasman Studios	-	CLOSED

Company/Studio	State	Current
Team Bondi	-	CLOSED
That Game	-	CLOSED
The Binary Mill	QLD	ACTIVE
The Broth	WA	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
The People's Republic of Animation	SA	NAGD
The Voxel Agents	VIC	ACTIVE
Third Wave Games	VIC	CLOSED
Three Phase Interactive	VIC	ACTIVE
Throw the Looking Glass	NSW	CLOSED & REBORN
Tim Randall	VIC	CLOSED
Tin Man Games	VIC	ACTIVE
Tiny Frame Games		ACTIVE
Titanium Studios	WA	ACTIVE
Torus Games	VIC	ACTIVE
Touch My Pixel	-	CLOSED
Toy Wars Invasion	WA	ACTIVE
Transmission Games	-	CLOSED
Trickstar Games	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Tru Blu Entertainment	NSW	NAGD
True Axis	VIC	ACTIVE
Tui Studios	NSW	ACTIVE
Twiitch	VIC	ACTIVE
Twisted Shield Interactive	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Two Bulls	VIC	ACTIVE
Two Headed Software	TAS	CLOSED
Two Lives Left	SA	ACTIVE
Tycom Studios	-	CLOSED
U235 Studios	-	CLOSED
Unbelievable Games	VIC	CLOSED
Unicorn Games	SA	ACTIVE - Not Fulltime
Universe Creation 101	VIC	ACTIVE - Not Fulltime
Universe One Interactive	SA	ACTIVE - Not Fulltime
Uppercut Games	NSW	ACTIVE
VagabondArmy	NSW	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Vardia Games	NSW	ACTIVE
Viva La Mobile	NSW	CLOSED & REBORN
WRK Studio	WA	CLOSED
Walk Through The Clock	VIC	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Walk Thru Walls Studios	WA	ACTIVE
Wander	VIC	ACTIVE
Wasabi Productions	NSW	NAGD
Well Placed Cactus	QLD	ACTIVE
Whale Hammer Games	ACT	ACTIVE
WheelSpin Studios	SA	ACTIVE - Not Fulltime
White Knight Games	WA	CLOSED
White Noise Games	-	CLOSED
Wicked Witch Software	VIC	ACTIVE
Wildfire Studios	QLD	CLOSED
Wildgrass Games	ACT	ACTIVE
Wired Developments	QLD	ASSUMED CLOSED - NO RESPONSE AFTER 3 ATTEMPTS
Witch Beam Games	VIC	ACTIVE
Wizzle Wazzle	VIC	ACTIVE
Wontom	-	CLOSED
Wontom	-	CLOSED
Zero Latency	VIC	ACTIVE - Not Fulltime
fUNKED Out	VIC	CLOSED

APPENDIX C - Phase 2 - Census Form

2013 Australian Game Developer Census

In 2007, the Australian Bureau of Statistics (ABS) commissioned a survey of the Australian Digital Games Industry (DGI). In their summary of findings they stated, "At end June 2007, there were 45 businesses in Australia (employing 1431 persons) involved in the provision of digital game development services.

More recently, the ABS released an update to these figures "At end June 2012, there were 84 businesses in Australia (employing 581 persons)"

http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/E612C796E7A5461FCA257BA50012F64A/$File/86790_2011-12.pdf

*Required

YEAR	SECTOR	BUSINESSES	FIELD	STATES & TERRITORIES									Business Ops	Production	MALES	FEMALES
				NSW	VIC	QLD	WA	SA	TAS	ACT	NT	TOTAL				
2007	DIGITAL GAMES	45	Employment (no.)	103	472	695	161					1431	223	1208	1277	154
2012	DIGITAL GAMES	84	Employment (no.)	122	256	141	16	46				581	185	396	530	51

We need a recount!

It's clear that during the five years between 2007 and 2012 the state of the Australian DGI changed significantly; with the number of people employed decreasing dramatically, while the number of businesses almost doubled.

During that time many of our larger game studios closed due to the GFC hitting hard overseas and our Aussie dollar exceeding the US dollar for the first time ever. On a more positive note, the uptake of mobile and casual games, as well as the ease of online distribution has made it more viable for smaller indie game developers to flourish in Australia.

Personally though, I believe that the number of businesses developing games in Australia at the moment far exceeds 84, which is why I've decided to create this short census to confirm it.

Who am I?

My name is Debi Taylor. I am a research student in the Games Studio at the University of Technology, Sydney, currently completing my thesis on the Australian Digital Games Industry.

Based on anecdotal evidence, since the June 2012 ABS figures were collected I believe that the digital games industry in Australia has experienced even further growth in the past 12 months. So rather than refer to old, outdated data in my thesis, I am attempting to re-collect some of the data that will show us more current numbers of game developers throughout the country.

I have set up this short census, which I am inviting all Aussie game developers to participate in. For reassurance, none of the questions will ask you about income, expenses, sales, or anything about your games, and all data will be summarised, and no personally identifiable information will be used. Once completed, a summary of the statistics will be made freely available online to the industry.

If you happen to share the link to this survey with other Aussie game developers, please ask them to email me afterwards, so that I can keep track of who I still need to chase - or not.
http://tinyurl.com/2013ADGI

Where is your studio located? *

- (•) In Australia
- ( ) Overseas

Continue »

9% completed

2013 Australian Game Developer Census

*Required

Is your game company still operating?

Remember, everything is confidential. All data will be summarised, with no personally identifiable information published.
Basically, I just want numbers!

Is your studio currently operating? *

- (•) Yes!
- ( ) No, we're taking a break at the moment, but hope to start back in the future
- ( ) No, unfortunately we have closed :(

Which game company do you represent?

(I would really love for you to tell us which company you're from, if for no other reason than to avoid duplicate entries (or so I know not to bother you with a reminder later on). If however, you do insist on being anonymous though, could you please email/message me later on and let me know that you have completed the census.
Thanks - Debi)

« Back Continue »

18% completed

STUDIO CLOSURE

The questions below are optional, but would greatly assist in helping us collect accurate data and better understand recent changes within the industry.

When did your studio cease operating?

Reason for closure

(Optional)

Approximately how many staff were laid-off when your studio closed?

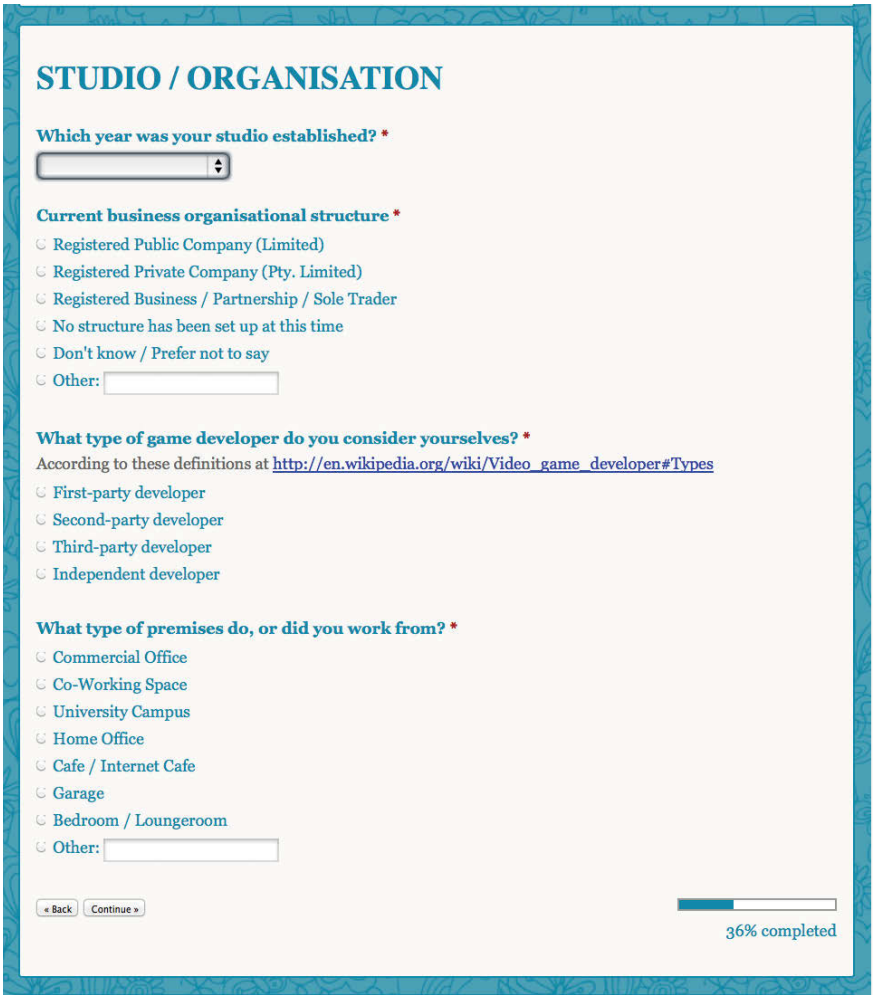
(Optional)

Would you like to add any comments?

(Optional)

« Back Continue »

27% completed



STUDIO / ORGANISATION

Which year was your studio established? *

Current business organisational structure *

- Registered Public Company (Limited)
- Registered Private Company (Pty. Limited)
- Registered Business / Partnership / Sole Trader
- No structure has been set up at this time
- Don't know / Prefer not to say
- Other:

What type of game developer do you consider yourselves? *

According to these definitions at http://en.wikipedia.org/wiki/Video_game_developer#Types

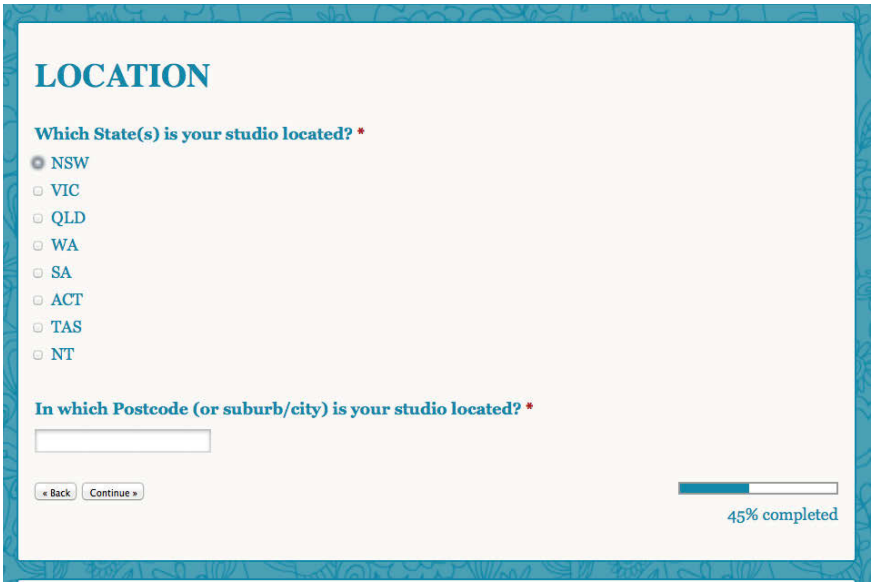
- First-party developer
- Second-party developer
- Third-party developer
- Independent developer

What type of premises do, or did you work from? *

- Commercial Office
- Co-Working Space
- University Campus
- Home Office
- Cafe / Internet Cafe
- Garage
- Bedroom / Loungeroom
- Other:

« Back Continue »

36% completed



LOCATION

Which State(s) is your studio located? *

- NSW
- VIC
- QLD
- WA
- SA
- ACT
- TAS
- NT

In which Postcode (or suburb/city) is your studio located? *

« Back Continue »

45% completed

EMPLOYEES

As at September, 2013, how many people work in your games studio? *

Including Management, Production, Game creation staff & Business Operations

- 1-3
- 4-9
- 10-19
- 20-50
- 50+
- Prefer not to say

How many staff are permanent full-time workers?

(Where this is there main job)

How many staff are part-time workers?

(Where they work less than a full day / full week)

How many staff are casual?

(Where they are called in when required)

« Back Continue »

63% completed

GAMES

(Optional - yet interesting ;))

Which devices(s) do you develop games for?

Check all that apply

- Desktop (PC / Mac)
- Web
- Console (XBox, Playstation, Wii)
- Handheld consoles
- Tablets
- Smartphones

How many games has your business completed/published?

- We're working on our first title now
- 1-3
- 4-9
- 10-19
- 20+
- Prefer not to say

« Back Continue »

54% completed

ROLES BY GENDER

Based on the Total number of Full & Part-Time staff that you mentioned on the previous page (you can click Back to re-check if you need to), now, consider what each person's main role is within your studio, as in, how many full & part-time staff work in the following areas?

(For one-man-bands who do everything, just mark yourself under game creator)

Obviously, you may not know exact numbers, but please try to be as accurate as you can.

MALES working in the following roles

How many Males contribute to the actual CREATION of games?
(e.g. Production, Story, Narrative, Game Design, Level Design, Mechanics, Graphics, UI, UX, Modelling, Rigging, Animation, Lighting & FX, Audio, Programming, Tools, DBA, Sys Admin, Testing)

How many Males work in areas that do not contribute to the actual creation of games?
(e.g. Management, Bus Dev, Project Management, Admin, Finance, HR, Sales, Marketing, PR, Community Management, Social Media)

FEMALES working in the following roles

How many Females contribute to the actual creation of games?
(e.g. Production, Story, Narrative, Game Design, Level Design, Mechanics, Graphics, UI, UX, Modelling, Rigging, Animation, Lighting & FX, Audio, Programming, Tools, DBA, Sys Admin, Testing)

How many Females work in areas that do not contribute to the actual creation of games?
(e.g. Management, Bus Dev, Project Management, Admin, Finance, HR, Sales, Marketing, PR, Community Management, Social Media)

« Back Submit

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The end

Thank you very much for your time :)

Female Game Developers

Beyond this survey, the broader theme of my thesis is about Aussie female game developers – in particular females who contribute to the actual creation of games, either by coding, design, story, graphics, audio, or animation.

So if you happen to be, or know of any Aussie women whose job is making games, or perhaps used to, I would really appreciate it if you could please point them to my Australian Women Game Developers Survey at http://tinyurl.com/AussieWiG

If you have any questions, please contact me at: debi.taylor@gmail.com, or on 0411 271 365.

« Back Submit

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Sorry!

Only Australian game developers qualify to participate in this survey.

Please share the link to this census survey with other Aussie game developers. http://tinyurl.com/2013ADGI

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APPENDIX D - Phase 3 - WiG Survey Form

Aussie Female Game Developers

*Required

We need a recount!

In 2007, the Australian Bureau of Statistics (ABS) commissioned a survey of the Australian Digital Games Industry (ADGI). In their summary at end June 2007, there were 154 females working in the digital game industry in Australia. More recently, the ABS released an update to these figures and at the end of June 2012, there were 51 females working in the digital game industry in Australia.

YEAR	SECTOR	BUSINESSES	FIELD	MALES	FEMALES	TOTAL
2006/2007	DIGITAL GAMES	45	Employment (no.)	1277	154	1431
2011/2012	DIGITAL GAMES	84	Employment (no.)	530	51	581
Change		87% Increase		-58% Decrease	67% Decrease	-59% Decrease

It's clear that during the five years between 2007 and 2012 the state of the ADGI changed significantly; with the number of game development businesses almost doubling, yet within that same time frame, the number of women more than halved.

Since the June 2012 ABS figures were collected, over the past 12 months I believe that the Digital Games Industry in Australia has experienced even further growth as far as the number of businesses are concerned. Yet it appears that the number of women continues to decline. So rather than refer to old, outdated statistics in my paper, I am attempting to re-collect and update the data that will show us more current numbers of female game developers across the country.

Who am I?

My name is Debi Taylor. I am a student at the University of Technology, Sydney in the UTS Games Studio, currently completing my thesis on the Underrepresentation of Women in the ADGI. I have set up a short survey, which I am inviting all female Aussie game developers to participate in. For reassurance, none of the questions will ask you about income, sales, or anything about your games, and all data will be summarised, with no personally identifiable information used. Once completed, a summary will be published online.

If you happen to know any women who are currently making games for a living in Australia, I would greatly appreciate if you could forward them the link to this survey at http://tinyurl.com/AussieWiG. If you have any questions, please contact me at: debi.taylor@gmail.com, or on 0411 271 365.

Are you female? *

- ○ Yes
- ○ No

Continue »

10% completed

Aussie Female Game Developers

*Required

Working in the Australian Digital Games Industry (DGI)

Your most recent or most significant job *

(Employee and/or Owner)

- Yes I am currently working for a Game Development company
- Yes I am currently working in the Australian DGI in Education
- Yes I am currently working in the Australian DGI (but not in Game Development or Education)
- Yes, as a game developer, but have since changed industries
- Yes, as a game developer, but I have since moved overseas to work in games
- Yes I have, but not at the moment, but I plan to go back
- No, not yet, but I am currently looking
- No, I have not, I plan to later on, but am not currently looking
- No, I have not, and don't plan to in the near future

« Back Continue »

20% completed

YOUR MOST RECENT POSITION in the Australian Digital Games Industry (DGI)

Your most recent or significant job

Company information

Which game company do you, did you last work for?

(Preferred - but optional)

Which State do you, or did you last work in the Australian DGI? *

- ◯ NSW
- ◯ VIC
- ◯ QLD
- ◯ WA
- ◯ SA
- ◯ ACT
- ◯ TAS
- ◯ NT
- ◯ I haven't worked in the Australian DGI

City / Suburb or Postcode *

(Of the most recent games company you worked for)

What type of premises do, or did you work from? *

- ◯ Commercial Office
- ◯ University Campus
- ◯ Garage
- ◯ Co-Working Space
- ◯ Cafe / Internet Cafe
- ◯ Bedroom / Loungeroom
- ◯ Home Office
- ◯ Other:

How did you get your most recent job in the Australian DGI? *

- ◯ I was approached / 'head-hunted' while working at another game company
- ◯ Through a game company advertisement
- ◯ Via a Recruitment Agency
- ◯ Through Word-of-mouth / while networking / at an event
- ◯ I started my own company
- ◯ Prefer not to say
- ◯ Other:

Conditions

In what capacity are you / were you last, employed? *

- ◯ Permanent Full-time
- ◯ Permanent Part-Time
- ◯ Casual / Freelance
- ◯ Voluntary
- ◯ Deferred payment / profit sharing scheme
- ◯ I own the company
- ◯ Prefer not to say
- ◯ Other: [ ]

How many hours on average would you work in a typical week at this job? *

- ◯ 0-5
- ◯ 6-15
- ◯ 16-24
- ◯ 25-40
- ◯ 41-50
- ◯ 50+
- ◯ Other: [ ]

« Back Continue »

30% completed

Roles

In smaller game development companies, staff are sometime expected to work across multiple skill areas. The following refers to your MAIN role or strongest/preferred skill that you identify with.

What area do you mainly identify with? *

- ○ DESIGN - Production, Story, Narrative, Game Design/Mechanics, Level Design
- ○ CREATIVE - 2D Graphics, User Interface, VFX
- ○ 3D - Modelling, Texturing, Lighting, Rigging, 3D Animation
- ○ AUDIO - Music, Sound effects
- ○ TECHNICAL - Programming/Coding, Tools, Web Dev, DBA, Sys Admin, Networking
- ○ QUALITY ASSURANCE - UX, QA, Testing, UAT
- ○ MARKETING - Sales, PR, Community Manager/Social Media
- ○ ADMINISTRATION - Management, Finance, HR
- ○ Other: [ ]

Your most recent position / job title / role

(Optional)

[ ]

Number of staff

Obviously, you may not know exact numbers, but please try to be as accurate as you can when answering the following questions.

Total number of staff in the company? *

Including Management, Admin and Game creation staff

- ○ 1-3
- ○ 4-9
- ○ 10-19
- ○ 20-50
- ○ 50+
- ○ Prefer not to say

In this job, how many females contributed to the actual CREATION of games? *

e.g. Design, Graphics, Animation, Story, Programming

[ ]

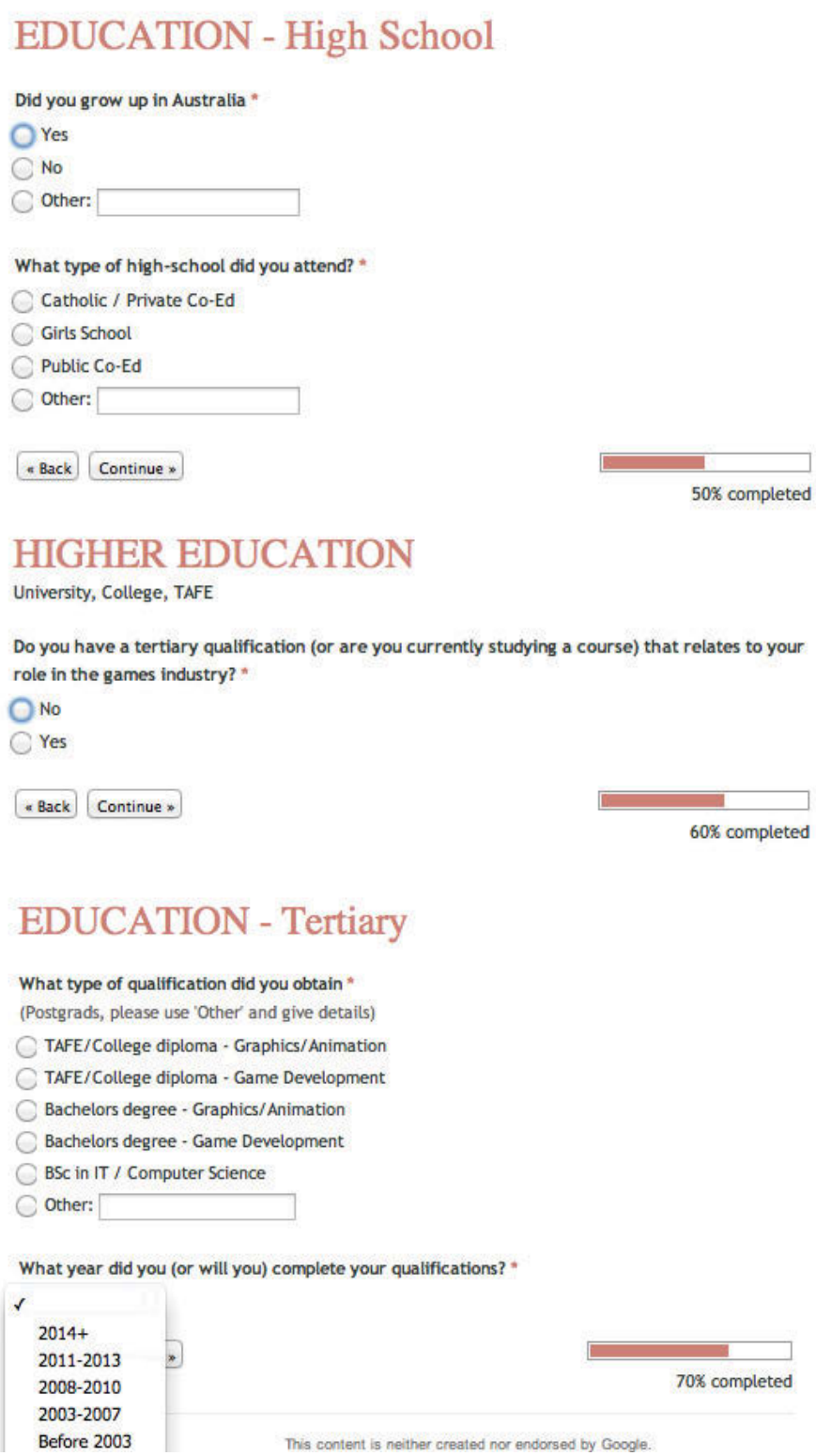
In this job, (approx.) how many females worked there who did NOT contribute to the actual creation of games?

e.g. Management, Administration, Finance, HR, Sales/Marketing

[ ]

« Back Continue »

40% completed



EDUCATION - High School

Did you grow up in Australia *

Yes
No
Other:

What type of high-school did you attend? *

Catholic / Private Co-Ed
Girls School
Public Co-Ed
Other:

« Back Continue »

50% completed

HIGHER EDUCATION

University, College, TAFE

Do you have a tertiary qualification (or are you currently studying a course) that relates to your role in the games industry? *

No
Yes

« Back Continue »

60% completed

EDUCATION - Tertiary

What type of qualification did you obtain *

(Postgrads, please use 'Other' and give details)

TAFE/College diploma - Graphics/Animation
TAFE/College diploma - Game Development
Bachelors degree - Graphics/Animation
Bachelors degree - Game Development
BSc in IT / Computer Science
Other:

What year did you (or will you) complete your qualifications? *

✓
2014+
2011-2013
2008-2010
2003-2007
Before 2003

»

70% completed

This content is neither created nor endorsed by Google.

Contact details for follow-up (anonymous) interview

If it is okay for me to contact you later on, please enter whichever details are easiest for me to get in touch with you again.

Your privacy will be respected and none of your contact details will be shared.

(NOTE: I would love to interview everyone! But as there are more women than I have time (the interview will take around an hour), I cannot guarantee I will be able to get back to you. But if you think you have something really important you would like to say about women in games in Australia, then let me know below!)

Name
(First name or nickname is fine)

Email address

Mobile number

Skype account name

Contact comments
(such as the best day/time to contact you)

Or, if you prefer, here are my details:

eMail: debi.taylor@gmail.com
Mobile: 0411-271-365
Skype: debitaylor (Sydney)

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Never submit passwords through Google Forms.

100%: You made it.

APPENDIX E - Phase 3 - WiG Survey Results

Timestamp	Your most recent or most significant job	Which State do you, or did you last work in the Australian DGI?	City / Suburb or Postcode	What type of premises do, or did you work from?	How did you get your most recent job in the Australian DGI?	In what capacity are you / were you last, employed?	How many hours on average would you work in a typical week at this job?	What area do you mainly identify with?	Total number of staff in the company	Females CREATION	NOT contribute to creation	Did you grow up in Australia	What type of high-school did you attend?	Do you have a tertiary qualification (or are you currently studying a course) that relates to your role in the games industry?	What type of qualification did you obtain	What year did you (or will you) complete your qualifications?
23/09/2013 20:40:58	Yes I am currently working for a Game Development company	WA	Perth	Bedroom / Loungeroom	I started my own company	I own the company	16-24	DESIGN	4-9	3	0	Yes	Public Co-Ed	No	BSc Dentistry	Before 2003
23/09/2013 21:20:07	Yes I am currently working for a Game Development company	NSW	2021	Commercial Office	Through a game company advertisement	Deferred payment / profit sharing scheme	16-24	CREATIVE	10-19	1	0	Yes	Public Co-Ed	Yes	Bachelors degree - Graphics/Animation	2008-2010
23/09/2013 22:08:33	Yes I am currently working for a Game Development company	QLD	4000	Home Office	Through Word-of-mouth / while networking / at an event	Casual / Freelance	6-15	CREATIVE	4-9	1	0	Yes	Public Co-Ed	Yes	Bachelors degree - Game Development	2008-2010
23/09/2013 22:39:42	Yes I am currently working for a Game Development company	QLD	4103	Bedroom / Loungeroom	I started my own company	I own the company	25-40	TECHNICAL	1-3	1	0	Yes	Public Co-Ed	Yes	Bachelors degree - Game Development	2011-2013
23/09/2013 22:51:20	Yes I am currently working for a Game Development company	WA	Perth	Bedroom / Loungeroom	I started my own company	I own the company	6-15	3D	1-3	1	0	Yes	Girls School	Yes	TAFE/College diploma - Graphics/Animation	2008-2010
23/09/2013 22:51:58	Yes, as a game developer, but I have since moved overseas to work in games	NSW	2007	Commercial Office	Through a game company advertisement	Permanent Full-time	41-50	3D	50+	4	7	Yes	Girls School	Yes	TAFE/College diploma - Graphics/Animation	2003-2007
23/09/2013 22:54:44	Yes I have, but not at the moment, but I plan to go back	NSW	2500	Co-Working Space	I started my own company	I own the company	25-40	TECHNICAL	4-9	2	0	Yes	Girls School	Yes	BSc in IT / Computer Science	2011-2013
23/09/2013 22:55:25	Yes I am currently working for a Game Development company	SA	5081	Bedroom / Loungeroom	I started my own company	Voluntary	50+	TECHNICAL	1-3	1	0	Yes	Girls School	Yes	Bachelors degree - Game Development	2014+
23/09/2013 23:09:22	Yes I am currently working for a Game Development company	ACT	2600	Commercial Office	Through Word-of-mouth / while networking / at an event	Permanent Full-time	25-40	TECHNICAL	20-50	1	1	Yes	Girls School	Yes	PhD in CS	2011-2013
23/09/2013 23:28:50	Yes I am currently working for a Game Development company	ACT	2602	Co-Working Space	Through Word-of-mouth / while networking / at an event	Deferred payment / profit sharing scheme	50+	3D	4-9	1	0	Yes	Girls School	Yes	TAFE/College diploma - Graphics/Animation	2011-2013
23/09/2013 23:30:13	Yes, as a game developer, but have since changed industries	NSW	2007	Commercial Office	Through a game company advertisement	Permanent Full-time	50+	3D	50+	4	7	Yes	Girls School	Yes	TAFE/College diploma - Graphics/Animation	2011-2013
24/09/2013 00:17:10	Yes I am currently working for a Game Development company	VIC	3000	Home Office	I started my own company	Deferred payment / profit sharing scheme	25-40	DESIGN	4-9	1	0	Yes	Catholic / Private Co-Ed	Yes	Bachelors degree - Game Development	2011-2013
24/09/2013 00:24:31	Yes I am currently working for a Game Development company	VIC	3000	Home Office	Through Word-of-mouth / while networking / at an event	Casual / Freelance	6-15	DESIGN	10-19	5	1	Yes	Catholic / Private Co-Ed	Yes	BSc in IT / Computer Science	2003-2007
24/09/2013 00:29:39	Yes I am currently working for a Game Development company	VIC	3000	Home Office	I started my own company	I own the company	25-40	DESIGN	1-3	1	0	Yes	Catholic / Private Co-Ed	Yes	TAFE/College diploma - Game Development	2011-2013
24/09/2013 05:55:11	Yes I am currently working for a Game Development company	QLD	4128	Home Office	I started my own company	Permanent Full-time	41-50	DESIGN	1-3	1	0	Yes	Catholic / Private Co-Ed	Yes	TAFE/College diploma - Game Development	2008-2010
24/09/2013 05:58:30	Yes I am currently working in the Australian DGI (but not in Game Development or Education)		3153													
24/09/2013 10:07:59	Yes I am currently working for a Game Development company	WA	6000	Commercial Office	Through a game company advertisement	Permanent Full-time	25-40	MARKETING	10-19	2	1	Yes	Girls School	Yes	BSc in IT / Computer Science	2008-2010
24/09/2013 10:09:47	Yes I am currently working for a Game Development company	SA	5000	Co-Working Space	I started my own company	I own the company	6-15	DESIGN	4-9	1	0	Yes	Girls School	Yes	BSc in IT / Computer Science	2008-2010
24/09/2013 10:18:39	Yes I am currently working for a Game Development company	VIC	3068	Commercial Office	Through Word-of-mouth / while networking / at an event	Permanent Part-Time	25-40	MARKETING	20-50	2	1	Yes	Girls School	Yes	BSc in IT / Computer Science	2011-2013
24/09/2013 10:24:46	Yes I am currently working in the Australian DGI (but not in Game Development or Education)															
24/09/2013 10:49:45	Yes I am currently working for a Game Development company	VIC	3000	Commercial Office	Through Word-of-mouth / while networking / at an event	Permanent Full-time	41-50	ADMINISTRATION	50+	2	4	Yes	Girls School	Yes	Bachelors degree - Game Development	2008-2010
24/09/2013 12:42:53	Yes I am currently working for a Game Development company	NSW	2000	Commercial Office	Through a game company advertisement	Permanent Full-time	41-50	TECHNICAL	4-9	1	0	Yes	Girls School	Yes	BSc in IT / Computer Science	2011-2013
01/11/2013 19:02:49	Yes, as a game developer, but I have since moved overseas to work in games	VIC	3000	Commercial Office	Through a game company advertisement	Permanent Full-time	41-50	CREATIVE	20-50	2	4	No	Public Co-Ed	Yes	TAFE/College diploma - Graphics/Animation	2003-2007
01/11/2013 19:06:07	Yes I am currently working for a Game Development company	NSW	2500	Co-Working Space	Through Word-of-mouth / while networking / at an event	Voluntary	0-5	DESIGN	4-9	2	0	Yes	Public Co-Ed	Yes	TAFE/College diploma - Game Development	2011-2013
01/11/2013 19:07:36	Yes I am currently working for a Game Development company	VIC	3162	Home Office	I started my own company	I own the company	41-50	MARKETING	1-3	1	0	Yes	Public Co-Ed	Yes	TAFE/College diploma - Game Development	2003-2007
01/11/2013 19:09:00	Yes I am currently working for a Game Development company	VIC	3153	Commercial Office	Through a game company advertisement	Permanent Full-time	25-40	QA	20-50	1	1	Yes	Public Co-Ed	Yes	Bachelors degree - Game Development	2008-2010
01/11/2013 19:10:57	Yes I am currently working for a Game Development company	WA	6021	Commercial Office	Through Word-of-mouth / while networking / at an event	Permanent Full-time	41-50	TECHNICAL	4-9	2	3	Yes	Public Co-Ed	Yes	Bachelors degree - Game Development	2008-2010
01/11/2013 19:13:00	Yes I am currently working for a Game Development company	WA	Perth	Home Office	Through Word-of-mouth / while networking / at an event	Casual / Freelance	25-40	DESIGN	4-9	2	0	Yes	Public Co-Ed	Yes	Bachelors degree - Graphics/Animation	2003-2007
01/11/2013 19:18:22	Yes, as a game developer, but I have since moved overseas to work in games	WA	Canning Vale	Commercial Office	Through a game company advertisement	Permanent Full-time	41-50	TECHNICAL	20-50	4	1	No	Public Co-Ed	Yes	TAFE/College diploma - Game Development	2003-2007
01/11/2013 19:20:35	Yes, as a game developer, but I have since moved overseas to work in games	VIC	3056	Commercial Office	Through Word-of-mouth / while networking / at an event	Deferred payment / profit sharing scheme	25-40	AUDIO	4-9	2	0	Yes	Public Co-Ed	Yes	BA Fine Arts - Interactive Composition	2011-2013
01/11/2013 19:22:36	Yes, as a game developer, but have since changed industries	NSW	2007	Commercial Office	Through a game company advertisement	Permanent Full-time	50+	DESIGN	50+	4	4	Yes	Public Co-Ed	Yes	BSc in IT / Computer Science	2008-2010
01/11/2013 19:26:41	Yes, as a game developer, but have since changed industries	VIC	3000	Commercial Office	Through a game company advertisement	Permanent Full-time	50+	DESIGN	50+	1	1	Yes	Public Co-Ed	No	Communications	Before 2003
01/11/2013 19:28:13	Yes I am currently working for a Game Development company	VIC	3185	Home Office	I started my own company	I own the company	50+	DESIGN	1-3	2	1	Yes	Public Co-Ed	No	PhD	2008-2010
01/11/2013 19:33:29	Yes I am currently working in the Australian DGI in Education															
01/11/2013 19:35:37	Yes I am currently working for a Game Development company	QLD	4566	Home Office	I started my own company	I own the company	41-50	3D	1-3	2	0	Yes	Public Co-Ed	No	BA Film & TV	Before 2003
01/11/2013 19:36:53	Yes I am currently working for a Game Development company	VIC	3004	University Campus	Through Word-of-mouth / while networking / at an event	Casual / Freelance	16-24	3D	4-9	2	0	Yes	Public Co-Ed	Yes	TAFE/College diploma - Game Development	2011-2013
01/11/2013 19:38:10	Yes I am currently working for a Game Development company	VIC	3004	University Campus	Through Word-of-mouth / while networking / at an event	Deferred payment / profit sharing scheme	25-40	3D	10-19	2	0	Yes	Public Co-Ed	Yes	TAFE/College diploma - Game Development	2011-2013
01/11/2013 19:39:18	Yes I am currently working for a Game Development company	WA	6000	Commercial Office	Through a game company advertisement	Permanent Full-time	25-40	DESIGN	4-9	1	1	Yes	Public Co-Ed	Yes	Bachelors degree - Game Development	2011-2013
										66	38					

APPENDIX F - Phase 4 - WiG Interview Prompt sheet

INTERVIEW - Women who make games

Name

Location

- NSW
- VIC
- QLD
- WA
- SA
- TAS
- ACT
- NT

Continue »

BACKGROUND

Tell me a bit about yourself when you were a kid. What kind of kid were you?
Parents, Siblings?/Order, Rural/City/Overseas, Sport, Interests/Activities

EDUCATION

High School

What type of student were you at school?
Achievements?, Sport? Academic? Artistic? Behaviour? Favourite subjects? Maths/Science/English?

Tertiary Education

Degree / Diploma?
(Match to WiG Survey or re-enter)

Graduation Year
(Match to WiG Survey or re-enter)

On average, how many women were in your classes?
As a ratio, percentage or a fraction (Think about subjects that closely relate to making games - as opposed to say Business or Finance

HOME LIFE

Marital Status / kids

- (•) Single or Divorced - with no kids
- ( ) Married - with kids
- ( ) Single or Divorced - with kids

If you have a partner, what sort of job do they have?

VIDEO GAMES

Do you play video games? *

- (•) Yes - often
- ( ) Yes - occasionally
- ( ) Yes - rarely
- ( ) No - not at all

Tell us some of the types of games you like to play?

Role Models

Role Models

Do you have any role models? If yes, who?

If you said YES, then What is it about your Role Model that you admire most?

Getting into games

Can you recall when you first wanted to work in games?

When was it (year/age)? And if you can recall, why?

How did you first get into the Industry?

Support / Encouragement

What did your family think of you working (or wanting to work) in games?

What did your friends/contemporaries/partner think of you working (or wanting to work) in games?
i.e. people who are close to you and around your age

If you had discussed with a school career advisor that you wanted to work in games, what would their advice have been to you?

The studio where you currently or last worked

Tell me the story about how you got your FIRST JOB in the Games Industry

If no longer in the games industry - Why did you leave?
Please go into detail if you can

Your job

What about your job do (or did) you enjoy most?

How confident are/were you in your job?

What is / was your long-term goal in the games industry?
Where would you like to be in 10 years?

What would be your ideal job?
Give as much detail as possible

Work conditions

How do/did the people that you worked closely with think about the working conditions?
(and did you agree with them?)

Have you experienced crunch-time?

Is/was crunch something that is/was common where you work/worked?
As in, was it all the time, every week, just at the end of the week, just at the end of a project, like when if ever?

Do you know whether you are/were being paid fairly compared to others in similar positions where you work?

Are/were there any perks with your job?

Compared to say your friends outside of work, do you think your working conditions are better or worse, and why?

NETWORKING OUTSIDE OF WORK

Do/did you attend any game-related conferences?
If yes, explain. If not, why not?

Do/would you socialise with your game making coworkers outside of work?
If yes, explain. If not, why not?

Women game devs

How many women do you work closely with?
(Not including women from other departments - unless you have to interact with them in order to do you own job)

Do you feel isolated or outnumbered?
If yes, does/did this bother you?

Have/had the number of women creating games changed during the time you've worked in the industry?

Why did you think women stay in the industry?

Why did you think women leave the industry?

Have you had any problems with the people you worked with?
(or perhaps while working in groups at Uni)?

ENCOURAGING WOMEN INTO THE INDUSTRY

Do you think there should be more women in the games industry?
Explain

Would you (or have you) encouraged/discouraged other women to work in games?

In what ways do you think women could be encouraged?

Do you think there should be initiatives at school, university or work that encourage more women into the game industry?

« Back Submit
Never submit passwords through Google Forms.

100%: You made it.

APPENDIX G - Phase 4 - WiG Interview Response Quotes

CODE Name	Location	Tell me a bit about yourself when you were a kid. What kind of kid were you?	What type of student were you at school?	Degree / Diploma? (and what do you do now)	Graduation Year	On average, how many women were in your classes?	Marital Status / kids	If you have a partner, what sort of job do they have?	Do you play video games?
SIJ1	ACT	Dad is an **Astro-physicist**, Mum is a **graphic designer** Uncontrollable as a child, has ADHD, Enjoyed both **Art** and **literature**. Introduced to Mac by her **father who made her her first game** called Robot & Ball & House when she was **7**, Considers herself a goth, **nerd**. I as pretty **versatile**. I loved both **programming** & **art** & **anime**. **Oldest child - one younger brother**	Was a **goody-two shoes** at school, ** **I got along with teachers better than the other students** **, did well in Maths, bad at English, was studious, liked a **structured** environment, **liked school**, Stereotypical **nerd**, but doesn't consider labels like nerd, geek goth as being bad Studied fine **arts**, but **self-taught 3D art**. Suffered depression and illness throughout school and uni	**AIE**, Diploma Professional Games development, **Programmer**, C++ Loved this course. Teachers were great. Liked classroom settings and group work **Programmer first - artist second**	2011	In Programming there were 20 people, with 3 of us being girls. I was surprised. Thought there would have been more. **15% > 15%**	Single no kids Not on for years	My boyfriend lives in Perth. We met online **playing games**. He is a **game dev** and is planning to move to Canberra soon so we can make games together.	Yes - often
KAL2	ACT	I was born in Asia into an academic family and moved to Australia before high school. **Both my parents have a PhD** I wasn't a bookworm when I was young though did get into reading in my mid teens. As a child I did 3 main things for recreation - TV (**anime** & SciFi), **gaming** (often on the **neighbour's SNES**), and outdoor sport in roughly in that order. I was a **fan of gaming** ever since our family got our first **computer** when I was about **7**. I always encouraged friends to get into gaming even as a child. **Only child**	I was an **academic** at school. I was a **nerd** who **enjoyed gaming** even then as well as reading **fantasy** during my mid teens. **Computer Science was my favorite subject**, followed closely by Ancient History. I hated subjects like English and Math though - its a pity that they were compulsory subjects! Suffered depression. **Taught self 3D**	Bachelor of Science in IT **degree** Topped **programming**, though I think I prefer more to be a **designer**. I also **love 3D modelling** and texturing. I still do 3D at home, but practically no programming now as I left games and now work in corporate IT.	2009	There were about 14 when I started in first year, but by the time I graduated there were only maybe 5 females out of a group of 180 **6% > 1%**	Single no kids Hopes not to have kids	No boyfriend, but I have a lot of **male friends. Mostly we play games together.**	Yes - occasionally
HMC3	WA	**Introvert** as a child Father is a **chemical engineer** **Into computers, playing games from 11yrs with brother** **1 old brothers, 2 younger brothers** Considered herself a **Tom-Boy** Addicted to games in High School - Now only plays casually **Creative** - Graphic design and web design Loved to play with MSPaint ~13 year Progressed to Photoshop Reading - **Bookworm**	**Very good student** A-B Good at sports - teams sports and anything that involved hand-eye co-ordination - But **not athletics**	I started a law degree straight out of high school but **dropped** out in first year. **It was just tough and I don't think I was ready for uni.** I later went on to Murdoch to completed game **degree** majoring in software design & production. I have been a Unity C# programmer for the past 3 years.	2010	There was only **1 other girl** who was weaker technically out of about 28 guys. **5%**	Single no kids **When I do decide, I'll make sure there's maternatiy leave.**	In a relationship - **Me and my boyfriend still play a lot of games together.**	Yes - occasionally
SON4	QLD	**Introverted** Simple life Grew up in the country **Youngest of three. Oldest already moved out.** **Nerd** **Bookworm**	Grew up in a country town From Pre-school til Year 10 I grew up with same kids **Straight A student** **No good at athletics**	University - Visual Art in Film and Television degree Forte is in storytelling and narrative. I now do **game design** and **art** - mainly 2D **graphics, UI** and **3D** and **animation.**	20 years ago	When I was studying film there was a 50/50 split. Most girls wanted to become a Producer I was a freelance Camera Operator	Married - with kids	Work's from **home with husband making games**	Yes - occasionally
KSS2	VIC	I grew up in a greek family. I'm the youngest of three. I have one older brother and a much older sister that I never actually grew up with. Lived int he suburbs of Melbourne and moved around a bit As a kid was a 'spaz' - very absent minded Parents were strict - Greek Orthodox primary school Considered herself a **loser** & **wierdo** at school Wasn't allowed to play games as a young kid Was **fascinated with games since her first console** Dreamer - Liked to make up characters - has a good imagination. Loves **anime**	**Above average** but **bored** at school. Liked English, Literature - but was too interested in fantasy **Didn't feel like part of the world** Hated maths Attended a regular Co-ed high school Part of the dumb **nerds** - couldn't relate to the other students - had an **emo** phase Liked **drawing** and **anime** Considered herself a **bookworm** - loved movies	RMIT - TAFE in Film and TV Majored in Set designer Wanted to be a Film director / writer The course was quite intense and not so enjoyable Later on went to **AIE** and loved it. The course is really enjoyable. I liked that it was more about creating than writing papers. My strengths are in **art** - both **2D** and **3D**, but I hope to get more into **Game Design** which I am dabbling in	2006	1st year 3 or 4 3rd - only **2 girls left**	Single no kids		Yes - occasionally

GAA2	NSW	Youngest of 4 - **3 older brothers** **Parents are both academics. All brothers have post-docs** **tomboy** - but liked pink grew up playing video games with brothers liked **anime** and **pokemon**	**Higher than average** student. **Tried hard** **Very Quiet** **Studious** **Helped teachers** outside of class Likes **science** Suffered depression as a child	**AIE diploma** in Game Development My boyfriend decided to enrol in AIE. I read all the brochures and then I wanted to go there too. It looked pretty cool and appealed to how I learn. (just like being in industry). Taught in a very hands-on way. **Not as academically competitive as I think Uni would be and I think I got a lot more out of it.** (After we graduated we both got internships at the same AAA company). I can program, but I like variety. These days I prefer game **design** and **production**, but I do a bit of **graphics** and UI… and on the odd occasion **programming**	2007	In 1st year maybe 25 in non-programming subjects, but noticed when it came to programming electives that **I was the only one in the class.**	Single no kids	He works with me as a **game developer**	Yes - occasionally
FOR2	NSW	Coalminer & nurse (both have tertiary quals) **Eldest child + 1 brother** **Bookworm** **Not sporty** Played lots of **games** Female **cousin** introduced her to a **gameboy (Still loves Pokemon as an adult)** **Mainly played with boys** at school - **tomboy**	**High achiever** at school. Always liked **technical subjects.**	I did both a Bachelors and a Masters **degree** in Computer Science. In second year I became a programming tutor at Uni. I would class myself as a **programmer** first, but I do like **Game Design** and **Production. I like variety**	2009 & 2011	**One other girl** in my Programming subject Less as years went by	Single no kids	Designer for Team Bondi Indie - Designer	Yes - often
SOM3	QLD	Father was a **Research Scientist** Mother a **uni lecturer** At school was a **tomboy** and loved to play hockey Followed her **older brother** - never allowed to do or play games her brother played - but still did anyway Parents were pretty strict	I was a natural, but I was ** **smart lazy** ** I could have applied myself more I had a **good relationship with my teachers** and was given a lot of leeway I had some learning difficulties - dyslexia - clinical **depression** **Teachers took a personal interest in me.**	I did a **degree** in Theatre (acting, drama, agency) and took a multimedia elective subject and realised that this is what I wanted to do. I then did a **Diploma** - games development C++ **Distinction** (but programming wasn't really her forte) Preferred **animation, but I am versatile** Being ***both techie & creative*** I think testing was perfect as she knew coding and creative sides. I did **testing** for 4 years for **AAA** companies. I would call myself a **Tester and a 3D artist.** I dabble in **programming**, but it's not my strength	2008	**None.** Just me. There were 7 guys aged between 16-25 I didn't feel so bad The guys were all there to make games In later years, the groups had a variation of ages and **there were some problems. When I was put in charge of a bunch of guys.The older guys didn't like having a girl telling them what to do I think. I would have much preferred to take a backseat. Less hassle that way.**	Single no kids	Too busy getting my business off the ground for a relationship	Yes - occasionally
AIA2	VIC	Young parents, living in the suburbs My parents split just after I was born. My life revolved around the family business and I spent the majority of my childhood in the back of a pizza restaurant reading, playing computer games. **Uncle who is 5 years older also spent time in the back of the shop and played games with her.** She's always been **fine with her own company** Considers herself lucky to have strong, close female family members as role models. At school was friends with everyone - never stuck to one group Very flighty and social - but got sick of people quickly - so would go off and play by herself Estranged dad bought consoles to buy her off.	**Not sporty** - not interested - **terrible at everything to do with athletics.** But I liked horse riding because it was **solitary** **Above average student** - loved art - I got distracted a lot - didn't apply myself. I had no idea what I wanted to do after I left school and was grateful for my mum for not pushing me to make up my mind. My mum really trusted me and never placed rules on what I could or couldn't do. I loved maths but wasn't so good, but enjoyed it Did **art** and **literature** and kept all my options open - but english was not my forte. But I started **creative writing** and joined forums online. Loved **science** & biology After school, mum sent her to Canary Islands for a year. As she didn't know Spanish, she barely spoke English She had a **DS** but barely played games until a **cousin** had a **PS2** When she got back she felt lost as she'd grown away from her friends. Took about 3 months to settle back in. Decided she wanted to be a paramedic or forensic scientist - friends thought it was morbid	Did a 1 year diploma course in paramedics course. **I didn't fit in. I just didn't suit the job.** I preferred science & maths as unlike literature it's 'not interpreted'. Wanted to do something creative - loved drawing so investigated a **Degree** BSc Interactive Entertainment (Game Design) - **QANTM** college. Loved psychology, drawing, unity, maya, lots of mini-games using javascript - Pretty **rubbish at coding** - couldn't pick it up but managed to make a **2D platformer in unity.** **Art + Game design** (to a much less degree **programing**)	2013	When I started in 2011 there were 3 girls out of 50 - two did animation and one did game design. One older one dropped out for a while not sure what the reason was.	Single no kids		Yes - often
MAM3	ACT	Grew up in Canberra **One older brother** who she played games with a lot **Nerd** **Quiet/shy** Love **books** but was also an alrounder at sports, **hated athletics** Dad - Public Servant - Mum - **research** librarian ****** Our parents treated me and my brother the same when it came to toys. We preferred to play with lego together rather than him play with trucks and me play with dolls ******	Love my **Atari** - especailly car racing and buzzbots Started playing around age **7- 8** Was a good student til Year 10 Started socialising in Years 11 & 12 - didn't work as hard as she could have	ANU - Bsc IT degree - **dropped** out after 6 months - **I was overwhelmed and couldn't keep up. I didn't understand the way they were teaching it compared to school.** I Took a year off and manage a pizzeria. **I don't think I was ready for study when I was 18. I just didn't have the confidence.** Later I completed a BSc IT **degree** at the Uni of Canberra. I did it from scratch as I wanted a fresh start even though I could have gotten credits for the previous work I completed. I ended up doing my **Honours** in Artificial Intelligence and then went on to work in an AI research group. I then moved to QLD and did my **PhD** - QUT There are a few other women up there doing games and AI. I would class myself as an **AI Programmer**	2013	In my classes I'd say around 15-20% were women in first year. **A lot seemed to have dropped out in 1st year - It was more noticeable in programming as I was pretty outnumbered.**	Married - with kids Took a break during PhD	My husband is a **programmer.** We met at a **games** course. We have two kids.	Yes - often

Tell us some of the types of games you like to play?	Role Models	If you said YES, then what is it about your Role Model that you admire most?	Can you recall when you first wanted to work in games?	How did you first get into the Industry?	What did your family think of you working (or wanting to work) in games?	What did your friends/contemporaries/partner think of you working (or wanting to work) in games?
I play mainly **casual** games now - due to pain and no energy. I love Minecraft, and **casual** games on Facebook - like virtual village - bongo online - send your minions My faves are **Bioshock** & Borderlands. As I have Lupus it really takes all my energy. The pain and fatigue prevents me from playing longer games these days.	**Dad - is her biggest role model** - always encouraged her at everything, was cool having a dad who could make games for you	She 'gets' her dad :) That he has a PhD **If her dad can do then she can**	Year 11 & 12 Did more **IT** stuff Concentrating on **Art** **Web Design / HTML** Friend Jeff decided to go to **AIE** to do Art She followed and chose game dev Enjoys **Programming 'creatively' (as opposed to coding banking software'**	I was doing programming. A lot of freelance websites - maintaining them and stuff for friends and family and got a few contacts that way. I'm not actually freelancing now, but have had a couple of permanent part-time jobs programming games.	**I receive fantastic support from both my parents.** My mother is a graphic designer and is very understanding. Both my parents taught me to follow my passions. Our family rented rented which meant we were never restricted by mortgages which meant we more money to follow our dreams rather than be constricted. **Passion** is big and important as a family	My friends weren't really phased when I started, but I **recall my Uncle asking whether there's any money in it. I think that is the main thing most people think about. They probably think it's a young person's game and that it's hard to imagine someone in their 40's still making games in the future.**
I play all sorts of games - from **Casual**, to **RPG**, to Adventure/Platformers to **FPS** - whatever I'm in the mood for at the time. I'm a bit eclectic when it comes to Gaming - Whatever I feel like at the time is what I go for	I have no role models - only **my Dad** I guess	N/A	**I wanted to work in gaming after I abandoned my first career choice (astronomy) at the age of 10.** I found gaming far more appealing as it opened the door to a lot more possibilities (including the possibility of less math!). In gaming, my imagination would be allowed to flourish. I've left the industry, but am still an avid gamer. Probably 10+ hours a week. And I still attend **LAN parties** when I can.	I first got into the industry through a gaming website that happened to have an opening for a game designer	**My family was generally supportive of my desire to get into gaming.** They did however warn me that this may not be the most rewarding career money-wise. I didn't care about that at the time. But they never stopped me.	My friends thought that working in the gaming industry would be pretty cool. It's neat when you are out somewhere and people ask what you do for a living. E**ven though my friends probably think it's cool, they probably are also thinking that it's not the soundest career choice.**
MMOs - anything with an **online community** Because I have a long commute, I mainly play more **casual** games these days as I don't have nearly as much **time** as I once had.	Inspired by friends - aspects of their personalities **Author** - Isaac Asimov - SciFi **Creativity** - Artists Dancer - skills, work ethics Teachers with a sense of humour	Nothing is impossible	When I was 11 I got a Gameboy and played pokemon. Then I got a Nintendo 64, I also played on my PC - a tank game, RPGs, Anything with a community as lots of my friends played online. I enjoyed Knight of Mine - where the majority of players were in Turkey. Practically stopped playing games when I started Uni. Just no time. Community is more important than Gameplay for me. I also love Chilvalry & Skyrim I still goes to **LAN parties** now.	Been there July 2010 3.5 years Process Control Company - Chemical Plants, real time data Visualisation, 3D, Control remote machines evolved into other applications - Serious Games - Training, Safety A lot of things to consider when making them Controls are different (AWSD > different interfaces and interaction styles) A lot of R&D - Similar to regular game but more involved Uses Unity - **taught self C#** on the job, scripting **When learning on the job, feel guilty about the amount of time she spent learning** Charges Low rates & taking twice as long **Low pay** / crap location - **Interesting** job - new technology - boss awesome - small company - **good culture** Likes working in an office	They knew I was pretty interested in computers all my life. Of course they worry about my job prospects and pay. **For this generation being competitive and ambitious to 'get-ahead', gaming is not seen as practical and is not considered a 'serious' job at least as far as my parents are concerned. Still, they never tried talking me out of it.**	My friends are very supportive. They're all gamers themselves. They all knew I would go into games as I had an aptitude for graphics and my boyfriend is a nerd gamer so he was pretty encouraging.
RPG Indie, Puzzle games - **fill in between family** But I probably play more **casual** games these days because of the **time constraints** of running a household and looking after the family	A few !!! **Sheri Graner-Ray** - met at GCAP Rianna Pratchet - writer	**Sheri is willing to publicly talk about issues and is a very brave woman.**	2000 - Freelance doing both camera & games Started at Krome 2001 In the beginning not many people There were around 30 people in the beginning and over the years we ramped up to 400 Then Boom times (2005-2006) ... I left in 2006 to have a baby - at the time they were hiring people from overseas because they were really busy I stayed at home with the baby for 18 months and only went back to work just before they were closing. Those last few years were miserable My husband was the Art director. He stayed until the end. I left before it went down	**Taught herself to animate** while at home with two young kids (while Husband was at XXX Company) XXX Company felt sorry for them and employed her too Great atmosphere back in the hey-day (pre 2006) Left 5 years before husband did. He stayed right til the end when they closed.	My family is **pretty supportive** now - but I am so much older and so they don't worry so much about me . When I was studying Film, Mum wanted me to be a dentist. She was devastated when I went to Uni to work in Film/TV which back then didn't seem like a secure career path (probably much like an actress). My parents were really concerned that I would never have anything after I went to Uni. So later on after I was already successful, it wasn't a problem that I went into games.	No-one was surprised, and I suspect they weren't concerned because they knew this was something we wanted to do.
Loves steam Play for a bit SWTOR - likes MMO's now surprisingly Portal **RPGs** Star Wars **Partner plays games - we play games together**	I have a few role models, mostly to do with **art..** I love John How and his work on LoTR. It has such ethereal beauty. Monty Oum who animated the Final Fantasy and Dead or Alive characters	I admire people who are humble & self taught. I got to meet Monty Oum at PAX this year. He is so inspiring!	My first exposure was with using **RPG Maker XP.** I messed around with it in high school. I liked it because it had assets you could edit which made learning it so much easier. When I was 20-21 I couldn't find any job that resonated me until I wentto AIE	After I graduated from AIE I started out as a contractor - nothing paid enough in the beginning so I worked part-time at a local retailer and was still living at home so that gave me the opportunity to get experience.	Father is old fashioned - didn't understand - didn't like her playing games But father has made a real effort to recognise games as a career She feels inferior to her much older siblings who are all "professionals" Has anxiety about being the youngest child who failed (compared to her siblings who work in medical) Her eldest sister always took the opportunity to put her down for her life choices.	New people I meet say it's the coolest thing! **People close to me though were not even aware there it's even an option.** **"There's a lot of ignorance out there. Most other people don't consider it a real job and think it's "just a phase"'**

Hardcore.. but tending more towards puzzles and casual as they fit better into a busy lifestyle As my partner (who also is a game developer) and I love games, we try to buy everything as it comes out. Genre doesn't matter, but we find we often don't get to finish a game like we used to. Life gets in the way. But it is something we share a passion off. We half play / half critique Would love to be able to find the time we used to have when were were in college together	**John Romero. We both look up to him and would like to think one day we could be as influential in games as he has been.**	The fact that he has stuck at it and been in the industry for a long time and has gathered really deep knowledge. He also has the ability to share their passion for games even all these years later.	I didn't know there was such a job! My boyfriend and I made our first game together in highschool using ppt That's how we spent time together - making stuff, not just games	We knew a few people who got their foot in the door of a large company and we got jobs as interns which turned into a full time job	Parents come from a very creative and open-minded background, so they didn't think it was unusual	If you tell people you make video games for a living the first thing they say is Way Cool!
RPG, Pokemon, Japanese Bioware, Final Fantasy Got into games - Final Fantasy 7 @ aged 13 Enjoys RPG the most More **time** now to play games I play for around 5 hours a week these days	I've had lots of role-models over my lifetime and they change often. There's this 20 yo kid, Matthew (truevalhalla) on the north coast who writes a blog and supports himself creating games I'd also say John Romero and Will Wright	His dedication and how focussed he is.	**I didn't know a Computer Science degree could lead to game development (FOR2)** In 2nd year we had a talk in class about a Game Jam that was being held in Brisbane.	From the first GlobalGameJam, Wollongong University paid for them to enter the competition - but only if they won, which bouyed them all. Then local businesses became interested in sponsoring her and her team. They got money for space for a team of 10 based from GGJ. Currently the company is CLOSED - it lasted about two years. She now teaches game programming, but hopes to go back to making games in the future.	**Family is pretty accepting, but never considered her working in games as her *real/main job**** I've always had another job on the side - at the moment it's lecturing - so to my family they consider me an academic - when in reality it's a front ;)	Everyone I know is in games!
Bioshock I mainly play **casual** puzzle games on my mobile If I had more time I would play all my old games like Batman arkham. I LOVED the old Sierra games from around 1991 like Spacequest and Kings quest	**Mum** - working woman - much more creative than (Father passed away when she started her business) Her boss at AAA was her mentor and the first person he ever hired - He had a lot of faith in here and groomed her for production.	They are those who are close to me that inspire me, and make me a better person.	Got a job as a tester for AAA and when I completed my Diploma everyone in the class was pushed for apply for a job there.	Applied along with 3 other guys from her course and got it!	Parents **supported** financially Parents thankful she's not an actor Parents told friends she wok with computer	I have a solid group of friends who are very supportive (even though they don't play games). They're a little bit jealous because it's cool. (**No relationships because running the business takes a lot of time. Isn't interested in a relationship or trying to juggling**.)
Console, platformer, really into games - but strangely all the guys I've knows have not been :-/ Big fan of Resident Evil and horror genres Even before ratings came in, my mum was not strict about what I could play, but she knew what my limits were.	**Mum is the strongest person in her life.** She is my **most staunch supporter**	My mum. She is so sure of herself. She's a strong person and knows who she is and enjoys her own company. My mum has no pretensions and is not desperate and has never had to rely on a man. I think she taught me that I don't need to be defined by a man and I can do whatever I choose to make me happy..	At around seven I used to play a lot of megadrive console games with my uncle who was 5 years old. We had the original nintendo and played mortal combat and mario - It was so easy to play. I really liked playing Super Mario 3 with my **uncle.** I spent hours and hours playing Donkey Kong. When I got my **PS1** my favourite game was Resident Evil. Games these days for little kids are not as easy to get into.	When doing paramedics thought that she was not mature enough to handle crisis' as she would often get too close to patients. She decided she wanted to do something creative. Thought that she was getting too attached to people and knew she would only get 'worse'. Making games is quite insular in comparison and you can be detached. Was at the Supanova convention and wandered past the QANTM booth and grabbed a handful of brochures. Her friend at the time as, why on earth are you grabbing those? She shoved them in her bad and read them when she got home. The seed germinated and she applied the next semester.	My **Mum** is **supportive** of anything I do. I think it's because she **trusts** my judgement and knows that whatever I put my mind to, I'll try hard and excel.	**When I changed from paramedic, all my friends who had *approved* of my life direction were disappointed I went into games and a family friend was a little condescending about my choice.**
I would consider myself a hardcore gamer. I love **RPG, PC, Console** and mainly **AAA** titles. **But having a family doesn't leave as much time as I once had, so I don't get to play as often as I once did.**	Cannot think of any		During my Bachelors I wanted to work in games. I knew when I was a teenager that I wanted to be a programmer. I also did a graphics course during my bachelors	Believed that the only way to get into the industry was if she had her PhD in Artificial Intelligence Applied for ADFA - via a research group working on Military games for about 8 months Worked on and off throughout my PhD doing AI programming jobs	My Mum wasn't at all phased about me working in games. She plays more games than I do, and I think she's hoping more women work in games so that she can keep playing them.	Most people think it's unusual - but are interested in knowing about it

If you had discussed with a school career advisor that you wanted to work in games, what would their advice have been to you?	Tell me the story about how you got your FIRST JOB in the Games Industry	If no longer in the games industry - Why did you leave?	What about your job do (or did) you enjoy most?	How confident are/were you in your job?	What is / was your long-term goal in the games industry?	What would be your ideal job?
At school was struggling with English Had to study part time because of ill health during 11 & 12 Wanted to drop English Advisor was very helpful and encouraging for her as a girl to do programming	Final college joint project iOS game which gave her the **confidence** to go apply for a job in games Applied for experience rather than for the money	NA	Working in groups and solving problems. I love level design.	**When I was at college I had a few guys that would have pissing competitions about code, but now I am pretty confident as a coder and even my art is pretty good, or at least acceptable.**	To work in a company that produces AAA titles. I sound like a guy, right?	Where I could give my creative input and be a valued member of a team that collaborates on games that are new and innovative (that is, no sequels!)
I suspect they would have tried to change my mind and tell me to become a brain surgeon… Muahaha! **Seriously, I doubt they would even know there was such a job.**	XXX was my only job in the industry.. I found the job opening on a gaming website (don't remember which one). I was already doing a degree with a heavy emphasis on gaming and graphics, which I believe gave me an edge over other applicants. It was for a Game Designer job and I went through an initial interview with an admin assistant and finally with the lead designer where I had to design a game level on the fly and present it to him. I did well enough to get the job.	I basically I "**left in digust**" for several reasons: 1. There was no support from my colleagues with regards to doing well at my job / 'learning the ropes' 2. The company I worked for made **use of fear to force people to work overtime**: for example my probation was extended with a poorly worded explanation that I had not met 'targets', regardless of that fact that I had been working for a week on a particular aspect of the game and the 'targets' system was only recently introduced 3. There was no recognition. I suggested a game design idea to a group of senior designers. It was **ignored.** However a few minutes later one of the senior designers voiced exactly the same idea. He got the **credit** for it 4. Overtime. The expectation was that **overtime was the norm**. People worked on Christmas day with little acknowledgement of the fact 5. **Morale**. Due to the employment conditions, the **morale** of the group as a whole was understandably **low**. 6. Remuneration. **I was working at close to minimum wage and still expected to work ridiculous hours (80+ hours a week)**	I enjoyed the level design work that I was doing for the game. It was both enjoyable and enlightening to work on large levels and staging gunfights under the direction of my immediate supervisor.	**I had moments where I was quite confident as well as other moments where I was not as confident (due to the general morale of the group as well as employment conditions provided above)**	My long term goal was to remain in the Design side of the gaming industry and eventually work my way up to the Lead Designer	My ideal job (in no particular order) 1. Is both challenging and rewarding 2. Has a work/life balance 3. Provides appropriate remuneration 4. Has colleagues that are fun to work with (high **morale)**
They would have told me that making games is not a real job. Lucky I changed degrees when I was old enough to figure it out that it IS such a real job.	Got job through her Dad who is a chemical Engineer and knew her boss. First job out of uni. Still there.	NA	I love the people, community, culture and I have a good boss. Working in games really is fun.	Pretty confident about my abilities. No-one else has my skillset at work, so my job is pretty safe. My problem is that I am a perfectionist and so I am never 100% happy with what I do. I would consider myself an intermediate Unity C# developer.	More in skills than job roll - would like to be senior EXPERT	Making VFX for a movie or TV To see your work on a big screen
		Well, I didn't leave the industry, but I did go from being an employee to an owner. I hated the unpredictability and seeing the writing on the wall I was not prepared to **go down with the ship**, so I left before it got that bad	Flexibility of hours allows me to work, run a house and look after my family. Working from home and not having to commute. And working when the mood takes me, though I don't often work past 5pm. I am so much happier working for myself. The only downside is not having a constant weekly pay.	Very	Still be up and running Would love to be able to afford to employ people	What I have now but with financial security
I'm quite certain they would not have suggested games to me, and sure that they would not know where to point me either if I asked. Or if they did, they would more than likely steer her away They even thought that way when she enquired about getting into film. Considered it flaky *** AIE has VET in school in Melbourne (Christina Lee)	Working 2.5 days on one game - with sound Storyboarding, creating concept art/Sketching - writing Stories Concept - character artist - illustration - digital painting - 3D - Maya	NA	Creating - Worlds in her head - It's her reason of being Worlds - Characters breathing life into a character Stir feeling	**Generally not confident - but skills have improved a lot over the past year**	I would love to work for Weta Digital or Bioware!	Characters rather than environment

I came from a progressive school and even though they never mentioned that making games was an actual career choice, I think had I brought it up they would have encouraged me to explore it	I mentioned before that my boyfriend and I were given the opportunity to be an intern for 3 months with a bunch of about a dozen others all vying for a fulltime job. **It's not that I was better, but rather I was hungrier and was willing to put up with more.** **Other girls that came in as interns decided at the end that it was not the kind of environment they wanted to work in.**	I was given the opportunity to work overseas in Canada and took it. But I'm still in game!	The creative aspects - The freedom to give input and see it come to life. (My sister works in a corporate office and she tells me how she is never given the opportunity to give input). Although there is a hierarchy, you are not looked down upon by the bosses. Everyone has something to contribute (though there are some guys that seem not to take on board things suggested by women)	**Pretty confident in my current abilities - but of course, I have a long way to go**	Have our own game company - if we're together	Running my own game company - or producer at a large AAA
I went to an all girls school. There were no computer subjects so I doubt they would even know there was such a job.	The company I started that I mentioned earlier.	NA	NA		Producer More immediate as a programmer in a big studio (5 directors - Convict Interactive)	Programming **Working as a grunt for someone else.**
Career advisors would definitely have steered me in a different direction. Though they would have encourage guys. My maths teacher was shocked when they heard I had completed programming.	Applied whilst in TAFE and ended up working for 3 companies in 10 months: 1 - AAA (50) - when EA bought them out > 150 2 - AAA (450 over 3 states - 250 people in QLD) 3 - AAA (80)	NA	Being a part of a team In testing - lots of responsibility - liked supporting Enjoyed breaking down a game Would have been in Production has they stayed open	Very	Mid-sized (25-30) solid game developer Story-driven - theatre background helps a lot	Production
No way! They would probably have tried to steer me towards being a doctor or solicitor or vet. I went to a conservative - catholic girls school where 'male' vocations were not on the radar. They did have a mulitmedia course but it was cancelled as the teachers could not 'sell' the subject to students. If only they made it more exciting and interesting. **Career advisors would not even know that there was such a job!**		NA	I like the stuff I get to work on. For instance there's this 3D brawler set in 70's england. I like how it has evolved it's come a long way from the original design. The scope was way too big. Normally I don't like groupwork, but this has worked out okay. But I don't always find it fun to work collaboratively - it's a nice feeling to have victories My role was asset creation - team mates attitude "make her busy" - moved to user interface	GUI - user interface skills - was shocked that she was good at it In Maya I make assets mainly science equipment, props, health packs. I really enjoy the art side - even though I'm not the best drawer.	would love to work for rockstar or naughty dog plans to move to US or Canada - unless she lands a job in Melboume	Working for someone to gain experience and skillset I would love to work in character design and be doing more 3D animation
	Through my research in AI I landed a job and have been an AI programmer for the past 5 years. There are no other women actually making games (there is 1 female who is the office manager). There are about 45 people all up I have never thought about the fact that I am 'outnumbered'. The guys don't ake me feel that way.	NA	I worked overseas for 6 weeks for the parent company. As a comparison, I think it's hard over there and hat it's a lot more political and you have to watch what you do or say as I think there's more of a spotlight on those things and people are a lot more critical. Australia is more laid back, so I'd say working in Australa is way better - more enjoyable. You just get on with your work.	Very confident now. But then I have been doing it for years.	Next 5 years in the industry and then perhaps research	I would like my own company, but am happy to continue doing what I am doing now.

How do/did the people that you worked closely with think about the working conditions?	Have you experienced crunch-time?	Is/was crunch something that is/was common where you work/worked?	Do you know whether you are/were being paid fairly compared to others in similar positions where you work?	Are/were there any perks with your job?	Compared to say your friends outside of work, do you think your working conditions are better or worse, and why?	How many women do you work closely with?	Do you feel isolated or outnumbered?	Have/had the number of women creating games changed during the time you've worked in the industry?
In group meetings at Uni ***Dismissive from Art people because being a programmer they thought I could not possibly be creative too.*** ***All the informed ideas and decisions had to be fought for***. 5 Art - 3 Programmers 6 Guys - 2 Girls 2 Bachelors Program - 1 Advanced Dip All roughly the same age Teachers were okay - and supportive Sebastian was very caring and listened Bachelors thought they were better Refused to touch Macs	No	I'm scared of crunchtime because of my limited physical capacity. Not sure how I would go if I was put into that situation.	No idea. Never bothered to find out.	Working with people who are all passionate about the same things as you are.	When I was put in charge of a team and made project co-ordinator, I felt like I wasn't really contributing and I think the rest of the team thought I was a bludger. (lack of **confidence)**	None	Never even thought about it	Still very thin on the ground
The **morale** was quite low where I had worked and there were many complaints of overtime, questionable leadership (the boss openly screamed at designers) as well as the perpetual crunch time that everyone was experiencing	Yes	**Crunch time was the norm, almost every day - not the exception. It was always crunch time. Time off in Lieu was meant to be in place, however they would discourage you even thinking about taking time off.** Us newbs were being **treated like cannon-fodder.**	No, I was being paid close to minimal wage. I learned in hindsight that my remuneration should have been higher however the other starters were being paid similarly	I got to work on a AAA game title! It's a good feeling and sustains you for a while while you are working on something that other people consider important. But I suspect after your 3-4th title that you wouldn't be quite so excited (or willing to work til midnight)	I hated meeting up with my other uni friends on a Friday. We'd compare notes about our new jobs. I always felt worse because of the low pay to high work ratio compared to my friends, plus the fact that I had little chance to recuperate each week as I had to work weekends too. **(underpaid / no overtime / morale)**	None	Nope	Not that I'm aware of
	not really	Only on Project-based work, but depends on whether there are paid jobs Latest ever 10:30pm Not necessary now - only occasions - time of in lieu Not much pressure these days - last time was 2 years ago	It's pretty low pay - but everyone is probably getting low pay	Free parking Game consoles at work Try out new technology (Oculus, Raser, Wii joysticks) I think having other experienced people (4) that know their stuff inside and out in 3d kinda makes that a perk. It's very motivating.	I think I get to have a lot more fun at work than my friends. I also get to be on the leading edge of technology. It's never boring.	1 female animator who has been there for about 2 years and is generally less skilled. She cannot program so it's not like we work *that* closely together	**No. I consider it balanced even if the other women are in HR. I don't feel any different because I and doing a technical job.**	I've only ever been the token female. Don't know about other places
Refer to AAA job When is was small it was **fun** and more **intimate** like a big **family**, but once it started to get **rough - it became impersonal. In the end it wasn't so nice. It was like working in a factory churning out games.**	Yes, years old. Not now.	**YES... I don't want to go into it, but it basically crunch caused the demise of the place. That was years ago. I worked 7 days a week for about 2 years back in 2009.** **2013? - Not now that I work for myself. We set realistic deadlines and pretty much try to stop work before dinner and not work beyond that** There are times though, like preparing for PAX where you have to work on press releases, marketing and business stuff, where you might have to work until 9pm, but never for actualy games production.	I work for myself	as above	One obvious thing is that the pay is not the same, and working from home. I miss the social Interaction of working in a big team. And sometimes at home you get cabin fever - so I just head down to the beach	At AAA when I started - I was one of two I was lead in a team of 5 animators - but the only female When there were 400 staff at most there were 8 females all up and never more than 2 on a team	Never even occurred to me	Nope
Inappropriate behaviour was not always handled properly at Uni, but at work I have never had a problem. Except when I first started there was suggestive artwork which was soon removed. Comments made innocently Seems to be a lot with Aspergers Not aware is socially accepted Guys don't consider girls as girls I always make sure I dress in skirts like a girl rather than in daggy androgenous clothes, just so I look like I fit in.	No		No idea	**getting to work on really cool games!**			No (genuinely doesn't seemed phased by it)	No

Towards the end it **got rough**. Long hours, frayed nerves, constant changes, mis-communications, pressure from the stakeholder.	YES!!!!		**I suspect I was getting paid less, but I didn't care as long as I knew I was getting my name onto a AAA title.**	**Only that were were making cool nextgen stuff**	Way crappier... but at the time it was not a big deal. Afterwards we realised how bad things were	3-Apr	No.. my boyfriend was nearby ;)	I think there's less now. A lot of women are just not willing to put up with poor conditions
	No	We do consistent short days. Sometimes you have to work back - in preparation for a convention or for press deadlines for instance But never for production	NA	**I love the freedom of being able to make what you want - rather than be a process-work**	Well, all my friends work in games, so we're all in the same boat. But if you mean say people I grew up with? I'd say my job would be way more fun and interesting that most.	There were 10 in our team and from time to time we had other females work on parts.	Didn't feel outnumbered Only once where we were all going together on the bus and I was the only girl	Numbers are still very low
The conditions were pretty good. But that's probably because things were going well. I came into the AAA industry pretty late (most have closed now) and so apart from working long hours (which strangely didn't feel like a chore at the time but hindsight is wonderful), I guess I was still wide-eyed and not jaded. But I can understand a lot of other people feeling that the **morale** towards the end was waning.	YES!!!!	**Three years ago I was working 16 hour days for months on end then the project was cancelled. It was so deflating. All accrued overtime in lieu was lost. That is, we were all screwed. Things have changed a lot in the last 2-3 years. People have started to realise that there are diminishing returns from working your staff in to the ground. But there are still some guys that think that it's the ONLY way to work. Not me. I think it's poor planning.** **It's one of the reasons why I started my own business. If I'm going to be working 12 hour days I don't want it lining someone else's pockets**		Often had dinners -Treated well by Warner bros - good camaraderie Beer & pizza every friday - music jams **Fun - *** likeminded *** people to hang out with.** **We probably share more common interests than other jobs.** We had a Quality of Life manager at the studio as there were lots of international staff (that were pulled onto the project from all over the world and I guess they needed to make sure 'everyone' was okay)		AAA - 7 girls out of 150 total (1 programmer - 1 producer - 1 tester - 4 - admin) AAA was great - never had any issues AAA - no programmers - Artists & Animators 30	I've never felt outnumbered	
			No idea. I suspect I am being paid 'commensurate' with my skills. I dunno. I know I am not being paid as much as I might make outside, but I knew that, and accepted that when I started.	**Getting to work with cool, likeminded people who have the same end-goal**		none :(	**No, not at all. Although I am the only girl in a team of 9, I've never felt outnumbered. And I've never witnessed or experienced harassment.** **I think that it has helped that I have always had good male friends. I think the team considers me as one of the boys, though I am probably awkwardly in the middle of the spectrum of a girlie-girl - but not prissy.**	no
There's a lot of family support, so if I need time off to attend to family stuff, they're fine with it. At the moment I'm only working 4 days (a week) for the moment, but I can ramp back up.	Yes, years ago. Not now.	**Work's more fun and less crunch these days**. But if you put in extra hours you can get flexible time (that is, time off later), but only for say 1 or 2 extra hours	Never thought about it			Nope	Nope	

Why do you think women stay in the industry?	Why did you think women leave the industry?	Have you had any problems with the people you worked with?	Do/did you attend any game-related conferences?	Do/would you socialise with your game making coworkers outside of work?	If you answered yes, then why do you think there should be more women in the games industry?	Would you (or have you) encouraged/discouraged other women to work in games?	In what ways do you think women could be encouraged?
Games have been a huge part of my life and I feel very passionate about making games.	I cannot imagine that :)	**I was put in charge of a team. I had a problem with one of the guys who refused to take on-board anything I had to say. It was really tough going as he tried to get others to side with him. In the end, I backed down and got someone else to take over the lead. They still implemented everything as I had planned, but I didn't have the aggravation of playing politics with this guy. I just got on with my work. Afterwards he treated me fine and we get on okay now. I just think he had a problem because I was the only girl on the team AND I was put in charge.** **Looking back, I think guys at uni are stunted socially – but at work later on they turn into normal human beings**	Goes back to meet old teachers at college, but does attend industry events	Not really.	That is if that's what they want. Shouldn't be more just to even up the numbers, but rather if girls want to do something, they should not be discouraged from doing it.	Yes!! **Lot of girls underestimate their ability** **Girls need to be encouraged** Teams should be more diverse - not just gender - because sexism and racism would be less of a problem Girls don't know they can do certain things - they need to be given the opportunity	**More exposure to computers and technology in primary school** ***** At school they might show you HOW, but they never show you WHAT you what you CAN do in technology ***** Adults have odd attitudes towards girls in tech
There are several reasons for this, i.e. Some people are willing to tolerate the employment conditions to **follow their dreams.** Hopefully other women may have had different experiences to mine and were satisfied with their jobs	**There is not enough recognition given to women in the games industry - especially in large companies, I suspect.**	**At Uni: The most important thing I think they forget to teach you is how to work in groups. Not just how to make a game as a team - but HOW to work in teams together.** **At AAA: Towards the end it was a pretty tumultous time. A lot of screaming, frayed nervous and management didn't do anything to ease the pressure or try to fix the problem. They just overlooked it**	No	No, my relationship with the colleagues that I had worked with in the games industry was purely professional	Absolutely! This allows for more diverse games to be potentially made and distributed to the market	I would **encourage** them, with the warning of the potential 'dangers' of working in the industry, especially given that it is easy for grads to be taken advantage of	**Women can be encouraged through initiatives in university, specialised course offerings as well as some 'meet the developer' panels where women can get advice from other women that are already in the industry**
I think it depends on more the company than the industry. If the company looks after you, then of course you want to stay	NA	**I've never personally experienced any sexism or harassment. Some guys though are awkward and can make inappropriate comments or worse, apologise every time, which makes me remember I'm a girl. Like when I first started they would make a big deal about having to hide the porn drive. But really it's not an issue it happens outside of work too.**	I've attended Lets Make Games once or twice and would love to be able to attend more but they are so far away and difficult to get home from. They're a good supportive community.	LAN parties	Yes, it's always good to maintain **balance**	Yes! **They should encourage girls to embrace computers and to play more games from the time they start school**	**There needs to be initiatives at school that speak to how girls learn**
It's a **fun,** creative industry. I can think of a lot worse places to work.		**Never seen sexism at work** or maybe I'm immune to it	I love attending conferences and conventions like GCAP & PAX. I get really energised and inspired by all the awesome people that attend	Yes. I live with them ;)		I appeared in an article on Spawn Point. Afterward little girls approached at school when I was picking up my daughters. I was surprised how in awe they were of me! Being a mother who made games. So I'm both a mum and a Role-Model Mum for other girls But prior to that I hadn't previously considered being a role-model. All my daughters are interested in games. For us it's like a family hobby	**Introduce them while they are young so they know they can do it.**
Because I think they like to know they have input into something that thousands of people willl be affected by. But, I have heard horror stories from US and understand why they leave.		**When I was lead I was questioned more by both girls and guys. It was frustrating like it was ingrained - subconsciously for people to challenge my every decision. In the end I stepped down because it was too stressful and I took a backseat role. I still had control of my work but wasn't as scrutinised as much.**	PAX - Seattle IGDA Melbourne GCAP		**I think that a lot of girls sells themselves short. They actually need a verbal kick up the arse. They need to know what being passionate about something feels like.** **Guys are pushed by their families, perhaps because men are still expected to be the breadwinners, so a lot of girls just sit back. I think a lot of families are to blame as to why girls are apathetic, unambitious. They need to be stronger. Girls need pep talks to make them less complacent.**		

To make a name for themselves in the hope they can get a better job, or open their own studio	It's hard to juggle home and work life when you are working long hours that are expected of you	**Once classes were over, guys in your team never wanted to stay back and work on out games, they would just piss off and you wouldn't seem them until 10 minutes before the next class. SO infuriating!**	Yes - GDC	IGDA Beer & Pixels	Yes. Because having more women allows us to have a bigger voice Also, girls have good ideas that need sharing Girls ideas add variety and expand the types of games that would be available	**I definitely would encourage all girls in primary. But I realise it's not for everyone. Not everyone is interested, but lots of girls probably would never know they're interested because they've never been given the opportunity. I think you have to be ** the type ** though** **What do you mean, 'the type'?** **I mean, into games. Like nerdy - creative - passionate about games and just making stuff. And not ever being put off by what other people reckon, or to give up on your dream.**	**I think young girls need to know they can do stuff. Also letting them know the industry is there is a good start. Most think that all games are made in America.** **Teach them how to mod and make levels. My boyfriend did it on his own when he was young and I would not have thought it was possible for me had he not been around.** *** GIRLS NEED TO KNOW IT'S POSSIBLE ***
The people you get to work with all have the same common goals.	I can't imagine that!	No probs	YES - everything. I'm very involved with the community. I find that it's a lot easier to work on a project when there is a greater community.	ABSOLUTELY!	Yes. Not just in games, but in Engineering / Science Some girls just do not know what those jobs entail and thinks that more girls would get involved if only they were exposed	Yes! AIE has given me the opportunity to expose girls to games and game development. I organise guest speakers and workshops. Although for AIE marketing purposes it's directed at year 11-12 (so they will enrol next year) she recognises that *** **you need to get them younger***** Is currently organising an event at the Powerhouse for girls in games.	
It's quite exciting - if you compare it to other industries. I've always wanted to work in games so I cannot image what it would be like to work in another (boring) industry.	Well, I didn't leave the industry, but I did open up my own studio so that I could call the shots.	**Not at work, but yes, at University. I feel there should be some focus on group dynamics and how to solve problems together rather than allow teams to unravel and ultimately fail.**	Indie dev night - once a month - like Beer & Pixels	GCAP	YES **It's considered nerdy & weird (the pimply-faced teen boy in his darkened bedroom) and if people actually saw what was involved they would be pleasantly surprised and may even sit up and take notice**	YES	**Expose them to the broader options in games. Most people imagine that it's all about programming and even though programming is cool, they should be shown other areas like audio, music, sound, art, user interface, modelling**
		A couple of guys didn't want me in their group. One guy was particularly strong and had a lot of influence with the other. I'd worked with him before. It took him 14 weeks before he said I was doing a good job and realised he was wrong. Now he sings my praises. **The team leader pushed me into a programming role knowing that she was a "rubbish" programmer. She had to go away for 10 days during semester but when she got back, he threw out her work and re-did it himself, and then considered that she hadn't contributed.** (dismissive) **How did you solve it? Just sucked it up and got on with it**	supernova - loves pop culture armageddon - to buy stuff PAX - definitely planning to go next year - wanted to attend panels GCAP next year	IGDAM - haven't been before, but plans to attend		**Yes, but I don't think it's for all girls. Though I think that if girls *knew* about it, then they would be more who find they are interested**.	
It's great when you get to ship a game -something you've had input into.		**When I was at Uni I had a few guys that would have pissing competitions about code, but now I am pretty confident as a coder and even my art is pretty good, or at least acceptable.**		BBQs etc.			

Do you think there should be initiatives at school, university or work that encourage more women into the game industry?	
It's too late at University. We need to start encouraging girls in primary.	Absolutely! Making games is a great start Even science and art projects are good
Yes	Yes, where I work they are looking at ways to get more involved with the local community where we go around to schools and talk to girls.
Computer Science and Game Development should be taught in high school, not just to prepare kids for uni, but because learning how to program and to make games gives them a lot more skills that crossover into other areas.	Yes! And girls should know that they don't necessarily have to work for a male boss (though they're not bad), they just need to know that owning their own studio IS POSSIBLE. For instance in your survey on Women Game Devs, the questions kinda skew towards employees and not people who run their own companies like myself and the women I know. So we need to change people's mindsets.
	Yes, there needs to be more support They need to stop the "boys club" If little girls want to play games - they should be allowed to play games - not just *girlie* games, but also games that traditionally parents would give to boys. There should be more career days during primary school - that focus on industries that are male dominated Getting girls into games early would empower them (so that they are not considered john-come-latelys). This would help with sexism in games - "Get them when they're young" (Her friend a hairdresser went to the local school and spoke to grade 2-3 kids so they could see something other than traditional jobs)
	Changes need to be made to when kids are really young and how they engage with games. I want my daughter to have more opportunities that give them confidence in doing things that for males is natural.