

Female game developers in the Australian digital games industry

University of Technology, Sydney

Faculty of Engineering and Information Technology

School of Software

Honours Thesis 2013

Debbie M Taylor

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

Acknowledgements

I would especially like to thank and acknowledge the supervision and guidance provided by Dr Yusuf Pisan, who despite coming from a technical background in Artificial Intelligence, accepted to take me on and allowed me to pursue research in the Social Sciences. For giving me latitude, yet clipping my wings when I got too ambitious, and ultimately for ensuring that I finished on time.

I would also like to thank;

- Robert Leidl, and Thomas Given-Wilson, for both having spent many, many hours over the past two years debating the pros and cons of me even starting this thesis. For being a sounding board, but more importantly for having faith that I could do it.
- My friend, Annie Burns, for her constant encouragement and support, for being my tester during practice interviews and for casting an outsider's eye over my thesis to ensure it made sense to a non-digital game industry lay-person.
- All of the interviewees, census & survey respondents; for kindly taking time out of your busy days to contribute your comments and thoughts, without which this thesis would not exist.
- Sourivat Seignarack (Souri) for his generous contribution of background information and insight into the industry.
- Giselle Rosman for being the centre of the 'Aussie game dev universe' - for being available to answer questions at all hours, filling in the blanks and offering to chase-up the un-contactable.
- Dr Michael Charleston for his patience, understanding and timely advice.
- My buddies, Shayne Baptist and Rohan Eldridge who made sure that I went outside in the sunlight and bought food at least once a week, and for generally keeping an eye on me.

Table of Contents

Statement of authorship/originality.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Figures.....	ix
Abstract.....	xi
Abbreviations, Acronyms & Definitions.....	xii
1 : INTRODUCTION.....	13
1.1 Problem Statement.....	13
1.2 Research Question.....	15
1.3 Personal Motivation.....	15
1.4 Aims & Objectives.....	16
1.4.1 Purpose and usefulness.....	16
1.4.2 Who might use this research.....	16
1.5 Organisation of this thesis.....	16
2 : LITERATURE REVIEW.....	17
2.1 Choice of literature.....	17
2.2 The Australian Digital Games Industry.....	18
2.2.1 Definition of a digital game.....	18
2.2.2 What is an Australian digital game company.....	19
2.2.3 The rise and fall and rise again of the Australian DGI.....	20
2.2.4 The connection between the IT and the digital games industry.....	21
2.2.5 Game Development in tertiary education.....	22
2.3 Gender, girls and playing digital games.....	24
2.3.1 The Australian game player market.....	24
2.3.2 Girls play differently to boys.....	25
2.3.3 The underrepresentation of female game characters.....	26

2.3.4	<i>How games are marketed to females</i>	26
2.3.5	<i>Games are created by men</i>	27
2.3.6	<i>Games industry responsibility</i>	28
2.4	Participation, under-representation and diversity	29
2.4.1	<i>Definition of participation</i>	29
2.4.2	<i>Financial benefits of increased participation</i>	29
2.4.3	<i>Participation in ethnic cultures</i>	30
2.4.4	<i>Why gender diversity matters in game development</i>	30
2.4.5	<i>The under-representation of women in the Australian digital games industry</i> ...	32
2.4.6	<i>Individual Differences</i>	33
2.5	The “Pipeline” Issue	34
2.5.1	<i>Game Design & Game Development degrees offered in Australia</i>	34
2.5.2	<i>IT and Game Development enrolments</i>	35
2.5.3	<i>Attrition</i>	36
2.6	Early influences of career choice.....	36
2.6.1	<i>Gender roles & stereotyping</i>	37
2.6.2	<i>Peer and parental influences</i>	38
2.6.3	<i>Teachers & Career Advisors</i>	38
2.6.4	<i>Lack of role models</i>	39
2.6.5	<i>Confidence</i>	39
2.6.6	<i>Girls use technology differently</i>	40
2.6.7	<i>Developing girls’ interest in computers & game development</i>	40
2.7	Recruiting and retaining	42
2.7.1	<i>Barriers that make entry to the digital games industry unattractive to women</i>	42
2.7.2	<i>Why the industry cannot retain women</i>	46
2.8	Summary of literature review	48
2.8.1	<i>Gap analysis of literature</i>	49
3	RESEARCH METHODOLOGY	51

3.1	Qualitative Research.....	51
3.2	A Mixed Method Grounded Theory approach.....	51
3.2.1	<i>Mixed Methods</i>	51
3.2.2	<i>Grounded Theory</i>	52
3.3	Methodological Considerations.....	53
3.3.1	<i>Feminist Methodology</i>	53
3.3.2	<i>Action Research</i>	53
4	: RESEARCH DESIGN & APPROACH.....	54
4.1	Phase 1 - Compile a database of Australian digital game companies.....	55
4.2	Quantitative Survey Design Approach Considerations.....	58
4.2.1	<i>Justification for conducting the census & surveys online</i>	58
4.2.2	<i>Questionnaire construction</i>	59
4.2.3	<i>Risks and Limitations</i>	61
4.3	Phase 2 – Australian DGI company Census.....	61
4.3.1	<i>Encouraging participation</i>	63
4.3.2	<i>Question flow & filtering</i>	64
4.3.3	<i>Question grouping and reasoning</i>	66
4.4	Phase 3 – Survey women working within the industry.....	67
4.5	Phase 4 – Women game developer interview.....	69
4.5.1	<i>Limitations</i>	71
4.5.2	<i>Target respondents</i>	71
4.5.3	<i>Deciding what to ask</i>	74
4.5.4	<i>Question list</i>	75
4.5.5	<i>Question flow</i>	77
4.5.6	<i>Conducting the interview</i>	77
4.6	Data Analysis Approach to Interviews.....	78
4.6.1	<i>Preparation of data</i>	78
4.6.2	<i>Coding Levels</i>	78

4.6.3	<i>Simultaneous data collection and analysis</i>	80
4.6.4	<i>Recurrent theme and Polarised topics</i>	80
4.6.5	<i>Completion of analysis</i>	83
4.6.6	<i>Risks</i>	83
5	: QUANTITATIVE DATA RESULTS	84
5.1	Game company Database and Census	84
5.1.1	<i>'Headcount' Summary</i>	84
5.1.2	<i>Definitions of Categories</i>	84
5.1.3	<i>The importance of the future of the AGDI</i>	87
5.1.4	<i>Recent Timeline of the industry in Australia</i>	88
5.1.5	<i>Indie Phase is good news</i>	88
5.2	Results of the Quantitative 'Women in Games' Survey.....	89
6	: FINDINGS	95
6.1	The women who make games in the Australian DGI.....	95
6.1.1	<i>Is there are typical female game developer?</i>	95
6.1.2	<i>Playing games</i>	96
6.1.3	<i>Childhood influences</i>	96
6.1.4	<i>Parents' education & influence on career choice</i>	97
6.1.5	<i>Role models</i>	98
6.2	Participation at University	98
6.2.1	<i>Low participation at Uni</i>	99
6.2.2	<i>Teaching style</i>	100
6.3	Working in a digital games studio	101
6.3.1	<i>Perceived stereotypical game industry culture</i>	101
6.3.2	<i>Workplace conditions</i>	103
6.3.3	<i>It's a not a proper career</i>	106
6.3.4	<i>Has there been a decline in the number of women participating in the ADGI?..</i>	107
6.3.5	<i>Isolation</i>	108

6.3.6	<i>Lack of information</i>	108
6.3.7	<i>School, teachers and career advisors</i>	109
6.4	Summary of Findings.....	110
7	: SUGGESTIONS FROM WOMEN IN THE INDUSTRY	112
8	: CONCLUSION	114
9	BIBLIOGRAPHY	116
	APPENDIX A	124
	APPENDIX B - Phase 1 – Australian Digital Game Company Database	127
	APPENDIX C - Phase 2 - Census Form	133
	APPENDIX D - Phase 3 - WiG Survey Form	138
	APPENDIX E - Phase 3 - WiG Survey Results	145
	APPENDIX F - Phase 4 - WiG Interview Prompt sheet	146
	APPENDIX G - Phase 4 - WiG Interview Response Quotes	151

List of Figures

Figure 1 - Comparison of ABS data from 2007 and 2012.....	13
Figure 2 – Percentage of women working in the games industry throughout the world (2004-2012).	15
Figure 3 - Types of digital games based on purpose (Marczewski 2013).....	19
Figure 4 - Digital Games Development Competency Framework.....	22
Figure 5 - Intersection of roles in digital game development - taught by faculty	23
Figure 6 - Job roles within the digital games industry.....	23
Figure 7 - Australian Game player market (Bond University 2012)	25
Figure 8 – Enrolments in Australian game development courses by State (2012)	35
Figure 9 - Australian 2012 enrolment numbers in Game-related degrees by Major/Faculty	35
Figure 10 – 2012 Game-development degree enrolments by Faculty/Major	35
Figure 11 – Collection of website headlines about negative game industry culture - 2012-2013.....	43
Figure 12 - Anita Sarkessian's series on Tropes -v- Women	45
Figure 13 - Salaries of digital games workers (US\$) by seniority, and by country, 2007	47
Figure 14 - The 12th Annual GD magazine Salary Survey	48
Figure 15 - The 'chicken & egg' cycle of the low participation of female in the DGI.....	49
Figure 16 - Reader comment from Kotaku article about reported ABS statistics	50
Figure 17 - Four phases of data collection	54
Figure 18 - ABS Digital Game Development Services Statistics 2007	56
Figure 19 - ABS Digital Game Development Services Statistics 2012	56
Figure 20 - Online social networking groups & mailing lists used to collate the initial database	57
Figure 21 - Census introduction page	62
Figure 22 - Industry events that coincided with the Australian DGI Census.....	63

Figure 23 - Flowchart of Phase 2 Census questions	65
Figure 24 - Census question list.....	66
Figure 25 - Flowchart of questions for the Aussie Women Game Developers Survey	68
Figure 26 - Target respondent criteria.....	71
Figure 27 - Breakdown of survey responses for sampling matrix	72
Figure 28 - Interview respondent sampling	73
Figure 29 - Phase 4 - Final list of 10 interviewee respondents.....	73
Figure 30 - Influences - Individual Differences.....	74
Figure 31 - Influences - The 'Pipeline' Issue	75
Figure 32 - Influences - Recruitment & Retention.....	75
Figure 33 - List of interview questions.....	76
Figure 34 - Excerpt of nodes used for coding	79
Figure 35 - Node map created for each interview	80
Figure 36 - Recurring themes & Polarised responses.....	82
Figure 37 - Snapshot as at 01.11.13 of the Status of Digital Game studios in Australia.....	84
Figure 38 - Respondent breakdown - Aussie Women Game Developer survey	89
Figure 39 - Birth order and influence of siblings of interviewee respondents.....	97
Figure 40 - The trend of where women in the ADGI are working	108
Figure 41 - Australia Games Industry Revenue 2006-2012.....	124
Figure 42 - Serious Games Taxonomy - designed by Sawyer & Smith	124
Figure 43 - Australian Bureau of Statistics data collection methodology	125
Figure 44 - Australian tertiary courses specifically in game design and development (2012).....	125
Figure 46 - Comparison of Active (tutorial) hours taught each week	126

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)
GDA	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)