Skills for Creativity in
Games Design
(Part 2)
Practitioner Conceptions
of Creativity
in Games Design.

Skills for Creativity in Games Design

(Part 2) Practitioner Conceptions of Creativity in Games Design.

In this report (part 2), using the same research methodology, theoretical framework and procedures, the focus is placed on ten games design practitioners' conceptions of skills for creativity in games design. Moreover, a comparison is made between the findings from both groups: the full time games design academics and the full time games design practitioners.

As the methodological and theoretical issues, broad context and background to this research, have been discussed in part 1 what follows is a brief reminder of research design and methodology and how these relate to the games design practitioners in this study.

2.2 Method

Research Design

This study gathered representative samples from two groups, an academic and a practitioner group, with ten participants per group. The same methodological procedure was used for both groups. After giving their consent, each participant took part in a semi-structured telephone interview to explore what skills, knowledge, talents or abilities were required to be creative as a games designer. Telephone transcriptions were analysed using the Domain Skills Indicator (DSI) methodology (see part 1), and participants ranked a list of domain relevant skills related to creativity within games design.

Practitioner Participants

The list of games design practitioners came from three sources: Tiga, Gamasutra and ELPSA.

Tiga, describes itself as "the national trade association representing the business and commercial interests of games software developers in the UK and Europe" (Tiga, 2008). The full membership contains large and medium sized Development Studios, with the associate membership made up of Development Studio with ten or less employees. As the Tiga membership also covered companies based outside of the UK, in order to restrict the sampling to the UK, where feasible (using the details available), companies with a European base were deselected from the study.

Gamasutra is an international online community that describes itself as "the leading game development site since 1997" (Think Services Game Group, 2008). It has 396,000 registered members, and can be easily searched for UK based game developers. Within the games design contractors section of the site, two categories were used to select companies for the database: "general games design", and "general visual arts" (comprised of 2D animation, 3D animation, character animation, 3D modeling, illustration/storyboarding, interface design, textures).

ELPSA, the Entertainment & Leisure Software Publishers Association, has nearly 60 companies that reflect most of the major publishers and distributors of interactive leisure and entertainment software in the UK (ELPSA, 2008). The membership contains companies

2.1 Introduction

In the United Kingdom (UK), the development of the "Creative Industries" has been a constant theme for government policy since 1997 (Crossick, 2006). Furthermore, given the nature of the creative industries, fostering creative talent remains a significant consideration, and much focus has been given to the employability of design graduates for the creative industries (Design Skills Advisory Panel, 2007). Organizations with an emphasis on employers' needs are concerned that HE is not delivering graduates with the skills industry requires (Lipsett, 2008, Skillset, 2004). However, as detailed in the first part of this report, whilst the focus on "skills for creativity" is welcome, concerns have been raised within higher education (HE) regarding an overly prescriptive interpretation of what these skills are and the quality of research used to identify appropriate skills (Macdonald, 2006; Wall et al., 2006).

The aim of this study is, through experimental research, to understand further the extent to which academics may differ to practitioners in their conception of skills relevant to creativity within a design subject: in this instance, games design

Part 1 of this study was focused on academic conceptions of skills for creativity in games design. Ten academics, sampled from BA Hons games courses in the UK, participated in identifying: first, those factors they each considered important to creativity in games design and, second, how, collectively, they rated particular skills, knowledge, talents and abilities relevant to creativity in games design.

whose main work is not games design but games publishing, games distribution, or other areas related to the games industry: for example, legal services. However, the category "game developer", was added to the database of companies for this research.

After accounting for the repetition of companies across the ELPSA, Tiga and Gamasutra lists, the database of UK companies sampled for this study was one hundred and fifty-four (see Appendix A). After randomising the list, 43 companies were contacted, of which just under 25% agreed to take part in the study.

Population parameters (age and gender) of games design practitioners were gathered from two sources: namely, Skillset's (the Sector Skills Council for the audio visual industry) Census 2006 and Workforce Survey 2005. The census data was used to gather the gender parameters (Skillset 2006); the survey data was used to gather the age parameters (Skillset, 2005a). Furthermore, the census data also defined the occupational taxonomy which Skillset used. Other research by Skillset has highlighted the distinction between "the four main disciplines of programming, art and animation, design and management" (Skillset, 2005b, p.4). Equally, previous studies have shown (Jeffries, 2007), too broad a sampling strategy may adversely impact levels of group consensus on domain skills. Given much of the debate with creativity research regarding domain specificity (Plucker & Beghetto, 2004), every effort was made to match population parameters to games designers and games artists.

Procedure

Each participant in this study took part in a semi-structured interview lasting 15 minutes. Transcriptions from each interview were coded into two clusters as defined by the DSI framework: Known Creativity Relevant Processes and Known Creativity Motivational Inflences. The remaining information was treated as potential domain relevant skills. After this analysis, a set of cards with a title and description of each domain specific skill was sent to each participant through the mail. The order of each set of cards was randomized for each participant.

On receipt of these cards, participants were asked to individually select ten cards and prioritize/rank their selections in order of importance to creativity within games design. Each participant's selection was scored as follows: the most important variable was given a score of 10, the next most important a score of 9, etc. Individual scores were then added together to give a collective score for each card. Where scores were tied, priority was given to the number of participants (n) who scored a variable. If a variable was still tied after this, priority was given to the lower Standard Deviation between tied variables.

2.3 Results

Skillset Population Data

Figure 1, below, shows the results of the Skillset data for the population parameters of games design practitioners. For this study, the most appropriate sector was computer games and, within this sector, the roles identified in section 10: Interactive or Games Production. Section 10 is further split into three groupings: Creative Development, Technical Development and Project Implementation. Both games designer and games artist are identified as examples of job titles within Creative Development[1]. As the gender parameters available encompass all job titles within Interactive or Games Production, it was not possible to consider how well these specifically match those in Creative Development. Furthermore, with age range, parameter data was only available by sector (Computer Games).

Figure 1.	21 to 25 years	26 to 35 years	36 to 50 years	51 years and over	Female	Male
	12%	64%	21%	3%	5%	95%

UK population age range and gender of games design practitioners

Practitioner Participants

The practitioner group consisted of ten games design practitioners, whose companies, studios or organisations were randomly selected from the list described above. All practitioners were employed on a full time basis. Within the group, eight were male and two were female.

No participants were within the age range of 16-24, five were between 25-34, five were between 35-49 and none were within the age range of 50 years of age and over. The mean age was 33.6 years (SD = 4.65 years). Nine identified themselves as games designers, and one male participant identified himself as a games artist. All ten participants took part in the telephone interviews; due to work commitments, two were unable to complete the prioritisation of domain skills.

Importance of Creativity to Games Design

Before the semi-structured interviews took place, practitioner participants were asked to answer the following question: On a scale of 1 to 10 (1 representing the least, 10 representing the most), how important is creativity to being a games designer? Scores ranged from 6 to 10; the percentage of responses for a particular score is shown in figure 2.

[1] In addition this section also contains the job titles of Animator, Environmental Artist, Graphic Designer, Illustrator, Interface Designer, Modeller, Musician, Script Writer, Sound Designer, Sound Engineer and Video Producer

Figure 2.
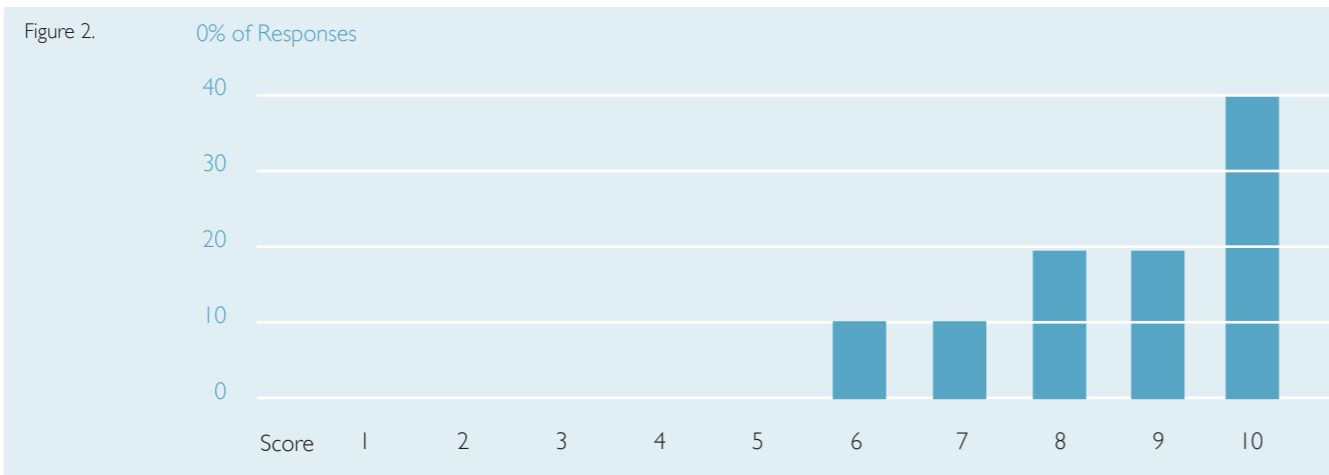
Percentage of responses plotted against scores to the question: How important is creativity to being a game designer? (n=10)

Transcript Analysis

The analysis of interviews showed that, collectively, the practitioner group suggested one hundred and nine variables important to creativity in games design. Of these variables, sixteen mapped to Known Creativity Motivational Influences, and twenty-eight mapped to Known Creativity Relevant Processes. For example, variables with a theme of "team working skills", or "willingness to work hard" were classified accordingly. The remaining sixty-five variables showed several areas of repetition between individual practitioners; after accounting for repetitions, a final list of twenty-six variables was identified (see Appendix B for titles and descriptions of each variable).

Prioritisation of Domain Relevant Skills

Complete results of prioritization and selection can be found in Appendix B. The top scoring variable for the practitioner participants was titled "Visualise the game, and player, in your mind" (See table 1). Of a possible maximum score of 80 it received a score of 43 (53.7% of the maximum score); 6 of the 8 participants in the group selected this variable.

Table 1:

Order	Title	Description
1.	Visualise the game, and player, in your mind	The ability to visualise the game, or versions the game could take, in your mind. The ability to see a game in its finished state in your head. For example, when you are speaking to an artist, they will describe a scene and you can envisage what it is going to be like as a player running down that alley way, or looking out at a vista, etc. Equally, at the same time, you need to be able to take a step back and visualise being a player holding a controller pressing these buttons to get a result, and be able to ask your self, What is that like? Is that intuitive? Do those buttons infer what I'm getting the player to do on the screen?
2.	Games analysis, and analysis of game mechanics	Be able to look at existing games, and see the things that are good about the game, or where it is has flaws. Then ask why is that flawed? Is it because a particular mechanic is inherently flawed in itself or could it have worked if it had been implemented differently? Understanding how a game is put together so you can dissect it, and pick out the bits that make star games what they are. What makes it feel good and why? To under stand, or try to understand, how games work in their particular genre.
3.	Creative facilitator: bring other peoples ideas into the games design process	Be a creative facilitator. For example, a designer has an idea (a racing game with a unique mechanic that's very blurry in their mind); they present it to a group of people because they know this is how they are going to get their final idea. People say lots of different things; the designer facilitates the selections from these ideas, and builds a final idea from these selections. You need to be able to take other people's ideas from the team, take them on board, and be able to give a final call on whether to keep going in a particular direction, or not.
4.	Game play rules	A good grasp of what makes game play interesting. There are learned systems that games, not just computer games but board games and traditional games, all follow. You can look at computer games, and games through the ages, and they all have sets of rules and the majority of these rules haven't changed over many years; it's the implementation of these rules that has changed
5.	The overall vision	Be able to hold the overall vision of the game. As a games designer, you are in charge of the vision of the whole product. This can require keeping the final product as close to the specific idea you've come up with as feasibly possible.

Five highest ranking variables from the practitioner group

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2.4 Discussion

The focus of these studies was to understand further the extent to which academics may differ, or not, to practitioners in their conception of skills relevant to creativity in games design. The limitation, and caveats, discussed in part one for the academics equally applies to the findings from this practitioner group. With that noted, however, given the same research methodology, procedures, and theoretical framework for both studies, comparisons can be made to consider where themes appear: either common or distinct. Such comparison can be made at a number of levels within each group, and across each group.

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Firstly, within each group, the variable identified on each card was sourced from the comments made during the semi-structured telephone interviews. For the majority of domain specific variables, more than one participant raised the same point within their group; this was the case for both the academic group and practitioner group. Individually, academic participants highlighted fifty-three domain specific variables, after accounting for repetitions, a final list of twenty-seven variables were identified (only fifteen of which were unique, i.e. not mentioned by another participant within the group). Some variables, for example: "Jack of all trades, master of one or two", were mentioned by up to five participants. Equally, for the practitioner group, participants highlighted sixty-five domain specific variables; again, after accounting for repetitions, a final list of twenty-six variables were identified (only six of which were unique). Some variables, for example: "Games analysis, and analysis of game mechanics", were mentioned by up to seven participants. Secondly, across each group, comparisons of card descriptions suggested varying levels of commonality between academics and practitioners. The final list of domain specific variables was, in the main, a composite of verbatim transcripts from several interviews.

By comparing variables along side each other, it is possible to reflect on those that are similar, and dissimilar within each group. Table 2 shows (in no particular ranking) those variables that suggest a degree of similarity. Again it must be noted, that participants from the academic group had no contact with participants from the practitioner group, and went through the same research methodology and procedure. Yet, the descriptions on these cards (see Appendix E part 1 and Appendix B part 2) suggest clear parallels around: understanding narrative; being a jack of all trades; having an openness to knowledge outside of games design; playing games; journalistic talent; working creatively within established game play rules; research skills; holding the big vision for the game; a historical knowledge of games design; games analysis; drawing, painting and illustrative skills; level design skills; and being a creative facilitator.

Table 2:		Academics	Practitioners	
		Understanding narrative and story telling	Understanding narrative & story telling	
		Jack of all trades, master of one or two	Some Artistic talent, some Programming talent	
		Openness to knowledge outside of games design	Find inspiration outside of video games	
		Playing games	Play a lot of games	
		Journalistic talent	Writing skills	
		Working creativity, but within the rules	Game play rules	
		Research skills	Research skills	Attention to detail
Fight your corner (within reason) on game play		Hold the big vision	The overall vision	
		Knowledge of games	Historical knowledge of games design	Be flexible with game genres, etc.
Analysis of platform		Analysis of games	Games analysis, and analysis of game mechanics	
Drawing		Communication through Illustrative skills	Drawing, painting and your ideas	Using artistic skills to sell
Level Design		Level Design software	Set design/level design	
The ability to handover		Spend time listening to other involved in making games	Creative facilitator: bring other peoples ideas into the games design process	Stay on top of varied information

Variables that suggest a degree of similarity across the academic and practitioner groups (in no particular ranking).

Table 3 shows a number of cards that relate to understanding and respecting the game player. The card labels given on the far left (for academics) and far right (for practitioners) suggest a variety of consideration that support a designer's understanding and empathy with their audience: for example, through knowing how much frustration a player can withstand; how to pace the game for different players; being able to visualise playing the game as the intended audience. Each of these variables reinforces the importance of understanding and respecting individual players and the culture surrounding the gaming market.

Table 3:

Academics		Practitioners
Be able to create novel interactivity	**Understanding your intended audience** The ability to understand the market you are designing for. Whether designing for a mature core audience, or putting together a design for children, you need to be able to understand the psychology and social mechanics behind a particular demographic. To be able to understand what their needs are; what their expectations are; what they find attractive; what they find distasteful; what will challenge them, what cues they will need to solve a problem. You need to do all this in a manner that doesn't talk down to them in anyway, and genuinely understand that what you like isn't what everybody else likes.	Pacing games mechanics to the audience
Designing choice into a game		
Balancing player frustration and reward	**Respect for the player; empathy with the market** Not giving them the same old stuff, because it has worked before. Not accepting a shallow stereotypical view of your audience, but understanding and respecting who you are designing for, having empathy for the people you are making it for. Being able to put a new take on an existing fan base by finding something new within the genre of that game.	Visualise the game, and player, in your mind
		Market knowledge
Enable social interaction		Wrapping the game mechanics

Grouping of cards relate to understanding and respecting the game player.

Table 4 present those variables that do not easily map onto those in the previous tables. The practitioners place an emphasis on anticipating the games market. Though there is a likeness to the "Knowledge of games" (table 1) mentioned by the academics, the focus is on future trends, rather than previous or current trends in the market. Equally, the notion of not only being able to anticipate but lead the games market is highlighted. A further distinction in table 4 relates to the need to have a creative approach to the business side of games design. This appears to be a role for those in the organisation who focus on securing new work for the company rather than for the designer. To this extent, this comment is representative of designers who work in large studios, rather than designers in smaller development studios;

who are more likely to take on business development role. The last set of distinctions for practitioners focuses on specific skills in photographic editing, and having very good hand/ eye co-ordination.

Table 4:

Academics	Practitioners
	Anticipate the games market
	A creative approach to the business side of games design
	Hand eye co-ordination
	Photo editing
3D Studio Max	
Seeing oneself as games designer more than a games player	

Variables that are distinct from those mentioned in the previous tables.

For academics, some basic knowledge in 3D Studio Max is mentioned, and identification with a self image of being a games designer more than a games player. Whilst these two distinct areas for the academic group may be important for creativity within games design, none of the group voted for them (even the originators of these variables) when choosing their rankings. Thus they appear to be relatively less important than a number of other factors mentioned by the academics.

A final set of comparisons across each group can be made in how collective scores within each group rank individual variables (Table 5). The blue arrows show where a similar variable rated by the academic group has been ranked higher by the practitioner group. Conversely, the black arrows show where a similar variable rated by the academic group has been ranked lower by the practitioner group. Boxes with a the dark blue background highlight the ten variables (mentioned in table 3) related to understanding and respecting the game player.

Table 5:

Rank	Title (academics)	(practitioners) Title	Rank
1	Analysis of games	Visualise the game, and player, in your mind	1
2	Playing games	Games analysis, and analysis of game mechanics	2
3	Openness to knowledge outside of games design	Creative facilitator: bring other peoples ideas into the games…	3
4	Research skills	Game play rules	4
5	Working within external constraints	The overall vision	5
6	(see table 3) Understanding your intended audience	Respect for the player; empathy with the market (see table 3)	6
7	Jack of all trades, master of one or two	Find inspiration outside of video games	7
8	Knowledge of games	Some artistic talent, some programming talent	8
9	Communication through drawing	Play a lot of games	9
10	Spend time listening to other involved in making games	Writing skills	10
11	Hold the big vision	Pacing games mechanics to the audience	11
12	Journalistic talent	Attention to detail	12
13	Be able to create novel interactivity	Stay on top of varied information	13
14	Working creativity, but within the rules	Market knowledge	14
15	Analysis of platform	Be flexible with game genres, etc.	15
16	Designing choice into a game	Research skills	16
17	Understanding narrative & interactive story telling	A creative approach to the business side of games design	17
18	Enable social interaction	Set design/level design	18
19	Balancing player frustration and reward	Drawing, painting and Illustrative skills	19
20	Fight your corner (within reason) on game play	Understanding narrative and story telling	20
21	The ability to handover	Using artistic skills to sell your ideas	21
	Seeing oneself as games designer more than a games player	Anticipate the games market	22
	Level design software	Historical knowledge of games design	23
	Technical feasibility	Wrapping the game mechanics	
	Level design	Photo editing	
	The quality of feeling at home in your working environment	Hand eye co-ordination	
	3D Studio Max		

Comparison between academic group rankings and practitioner group rankings.

The first comparison is that both academic and practitioners rate very highly the ability to analyse a game. They also show similarity in how they rate understanding and respecting the game player, and in their regard for having some artistic talent as well as programming talent. Likewise, writing skills and journalistic talent are rated at around the same region. There is less agreement in the way academics rate more highly: playing games, openness to knowledge outside of games design, and understanding narrative/story telling. In contrast, working within game play rules, being a creative facilitator, having the overall vision for the game, and skills in set design/level design are rated more highly by the practitioners.

Dramatic difference in ranking can be seen in the way research skills, knowledge of games, and communication through drawing are rated much more highly by the academics than the practitioners. However, differences in ranking do not mean those ranked lower by one group are unimportant. What these results highlight is that when required to choose from a list of variables already considered important for creativity within games design, some distinction can be made. Indeed, whether these differences in conception are "important", as was noted in the previous report, need to be confirmed by experimental studies relating to creative performance. For the moment it can be argued that academics and practitioners share significant levels of conceptions on creativity in games design.

An academic/practitioner division?

Returning to the original concerns expressed at the start of this research, the statement from Games Up? that, "…95% of video gaming degrees are simply not fit for purpose" (Lipsett, 2008), and Crossick's (2006) caution that employers do not "automatically know best what education their future employees need", suggests a divide between the values of educators and those of employers. Yet, on the basis of this research, the results suggest that games design academics' conception of skills for creativity show strong parallels with those of games design practitioners.

Clearly, one study is not enough to make a broad generalisation, but the practitioners appear to also value the conceptual abilities that would support Crossick's view of Higher Education, and, alongside this, academics value the skills that practitioners say they need to be creative. So, if academics share conceptions and values reflected by practitioners, and vice versa, is the notion of a division misinformed? Possibly. Moreover, the evidence of such differences between educators and employers may well be influenced by who is being researched, and how that research is undertaken. The patterns of voting in this study show that certain members of a group hold particularly strong views that are not reflected by the group as a whole (for academics see a1 and a4, Appendix F; for practitioners see p6 and p2, Appendix C). This is not to be taken as a failing; indeed, it may well be what makes them unique, but it does highlight that a focus group methodology could be heavily skewed if individuals exert their dominance over the group. This lends further weight to Macdonald's

criticism (2006) of The Film Skills Group (2003) referenced in the first report.
In contrast, particular skills only mentioned by one or two participants during the telephone interviews found almost universal support from the group during the prioritisation stage .
To this extent, this study reaffirms the importance of research methodology, for both collection and analysis of findings

Limitations of these Research Findings

From tables 2-4 given above, three skills are missing from the academic group: The quality of feeling at home in your working environment; technical feasibility and working within external constraints. This is because, on reflection, they were wrongly classified during analysis.

The quality of feeling at home in your working environment is more representative of a Known Creativity Motivational Influence, than domain specific. Though this variable was placed on the list of Domain Relevant Skills, no participants from the academic group selected this. Equally, technical feasibility was not selected by any of the academic participants, but the description suggests a commonality with working within External Constraints, which was rated as the fifth most important domain skill by the academic group. Whilst it is annoying to find such classification errors, such anomalies often highlight the dynamic relationship between Domain Relevant Skills, Known Creativity Motivational Influences and Known Creativity Relevant Processes. This has been the case with previous studies (Jeffries 2007), and is also the case here.

One theme that consistently arose during the telephone interviews was participants' observation about the need for setting constraints: to work against something that forces you to approach a task in a novel manner; using the constraint to push beyond the limits of a surface response. This need for constraints was raised by both the academics and practitioners. Where a participant mentioned this as something they actively sought, it was classified as a type of strategy (creativity heuristic) for getting novel ideas, and a Known Creative Relevant Processes. In contrast, where a constraint was presented by participants as something imposed upon them it appeared to occur at a level of intensity specific to games design. However, on reflection, this is more likely to be a Known Creativity Motivational Influence: for some domains, such external constraints are detrimental, for other domains, inspiring.

The fact that working within external constraints rated so highly for the academic group, is not exclusive to the academics; six of the practitioner group mentioned variables that related to working around industry limitations, technical limitations and restrictions, but these were classified as either Known Creativity Motivational Influences, or Known Creativity Relevant Processes. Given this frequency amongst the practitioner group it is likely they would have rated highly their own version of working within external constraints had the choice been available.

A further limitation to this study is that the representation of practitioners is skewed towards slightly older participants than the Skillset data suggests would occur in this population: no

participants were within the 16 -24 age range. Equally, the gender for this sample is slightly biased towards female practitioners: two female participants took part, rather than one. However, these discrepancies are slight, and Skillset data (whilst the most comprehensive population data available on the audio visual Industry) could be subject to sampling error. For example, the age ranges used from the 2005 workforce survey are based on a sample of 149 respondents from the computer games sector. It is difficult to accurately estimate the total size of the sector, but 2006 Skillset Census results gathered responses from 8800 respondents who identified themselves as working in Computer Games.

2.5 Conclusion

This paper highlights the results of two experimental studies on skills relevant to creativity within games design. The focus of these studies was to understand further the extent to which academics may differ from practitioners in their conception of skills relevant to creativity in games design

The main conclusions are, firstly, given the same research methodology, procedures, and theoretical framework for both studies, comparisons within each group, and across each group, highlight that games design academics' conception of skills for creativity show strong parallels with those of games design practitioners. Secondly, the voting patterns in these studies show that certain members of a group can hold particularly strong views that are not reflected by the rest of the group. To this extent, these studies reaffirm the importance of research methodology, for both the collection and analysis of findings.

The final conclusion, as noted in the first report, is although there is some consensus on domain relevant skills amongst games design practitioners, without validation via experimental research in relation to creative performance, caution is required before using these findings to inform educational practice.

2.6 Acknowledgments

2.7 References

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Appendix A:

Database of companies sampled for games design practitioners (alphabetically arranged)

1bit garden	Free Radical Design	Pixelogic Ltd. (Chris Butler)
3DAGames	Fuse Games	Plug In Media
3rd Dimension	Game Corporation	Prey Digital Studios
Abundant Software Ltd	Game Mission	PSFEI
Addictive 247	Gamerholix	PurpleWisdom Consultants
Airplay	Games Masters	Puzzlekings
AirPlay UK Ltd.	Gamesauce	Raining Genius Ltd
AlienPants Ltd	Gameware Development Ltd	Ravenbrook Limited
Alternatum Studios	Go Mobli	raw-studio
Aqua Pacific Limited	Gusto Games	Rebellion
Atomic Planet Entertainment Ltd	GW7 - GAMEWORLD SEVEN LTD	Revolution
Aurona Technologies Inc.	Hailstorm Entertainment Ltd.	Rockstar leeds
Babel Digital	Halch	SCEE
Berbank Green	Hand Painted Dog Ltd.	Selection One
Black Company Studios	Hive Partners	Short Fuze
Black Ridge Games	Idigicon	Simian Industries
Blaze Games	IMIGEA/Gamevial	Simian Production Audio Motion Limited
Blitz Games Ltd	Indy-Games Limited	Six By Nine Limited
Brash Entertainment	Juice Games	Square Enix Ltd
Brightspark Entertainment	Junction-18 Ltd	Stainless Games
CGSEVEN	Kodetank Ltd	Steve Ince - Writing and Design Solutions
Chattering Pixels	Kostar	Strange Agency
Chemistry	Kuju Entertainment	Strawdog Studios
ClinicalGames	Kuju London	Strawdogs Studios
Codemasters	Lee Banyard	strongtheme chris alex music UK
Collabora Limited	Mere Mortals	Sumo Digital
Coyote ConsoleLtd	Mick Beard Level Design	Swordfish Studios Ltd
Coyote Developments Ltd	Microsoft Ltd	Team 17
Crazed Ltd	Midway	Team 3 Games Ltd
Creative North	Mike Engstrom	Test Example Company
Creative Reality VideoGames Ltd	Miracle Studios Limited	The Code Monkeys
Curve Studios	Monumental Games	The Game Factory Ltd
Dark Rock Games	Morpheme	The Imode Limited
darksight.net	Multi Player Zone	The Nursing Home
David A Palmer Productions	NAMCO BANDAI Games Europe S.A.S.	Think Tank Studios Ltd
Dead Pixel Studios	nDreams	Transcendent Digital Ltd.
Denki	Nice Tech Ltd	Trinket Media Limited
DESQ	NiK NaK	Tuna Technologies
DevelopTrak Limited	Non-Stop Games	Twisted Studio
Digital Office	NorthStar Studios	Ubisoft Reflections Ltd
Distinctive Developments	Nu Generation	Ugly Studios
Double Six	Obscure Productions	Venom Games
Dynamo Games	Octane Digital Studios Ltd	Virtual Playground
ebgb-media	Oliver Davies - Game Designer	Visual Science
Egghead Interactive	On the Game	VooFoo Studios
Eiconic Games Limited	Philanthropy Studios Ltd	Vulcan Software Limited
Ernest W. Adams, Consulting Game Design	Phooka Entertainment	Wide Games Ltd
Eutechnyx	Pitstop	Wireless Amusement Ltd
Exient	Pivotal Games	Wireless Wizards Ltd
Finblade	Pixel Magick	Yakkety-Yak Multimedia Company Ltd
Four Door Lemon	Pixelogic Games Ltd	Zoe Mode
		Zoo Digital Publishing

Appendix B:

Final list of twenty-six variables, with titles and descriptions (alphabetically arranged by title)

Title	Description
A creative approach to the business side of games design	To have a business element which can see new opportunities, make links with the right people/companies, and who can go out and sell new ideas, as and when they occur, to the right people, which then brings in the money to develop them.
Anticipate the games market	The ability to anticipate where the market is going to go, and anticipate what sort of new things can be achieved with certain evolving technologies. What is creative today will not be next year and sometimes it is possible to anticipate and lead the games market.
Attention to detail	The ability to use your research to discover, for example, a bit about the atmosphere, the costumes for the characters, the background scenes and gaming environment, etc. Being able to have this attention to detail can really bring the game to life, whether the genre is real or fantasy based.
Be flexible with game genres, etc.	The ability to mould yourself into any particular style, genre or engine, and come up with the goods as a games designer.
Creative facilitator: bring other peoples ideas into the games design process	Be a creative facilitator. For example, a designer has an idea (a racing game with a unique mechanic that's very blurry in their mind); they present it to a group of people because they know this is how they are going to get their final idea. People say lots of different things; the designer facilitates the selections from these ideas, and builds a final idea from these selections. You need to be able to take other people's ideas from the team, take them on board, and be able to give a final call on whether to keep going in a particular direction, or not.
Drawing, painting and illustrative skills	To be skilled in drawing, painting and other skills associated with illustration and illustrators. For example, to have a good understanding of line, composition, light and shade. All these are fundamental qualities about design which will inform what you do, for example, with designing a character, a movement, but also with generates ideas in general, and for some designers this can help them with story building.
Find inspiration outside of video games	One of the problems with the games industry is that you'll play games and you can see things have been drawn directly from another game. Whilst it's okay to take inspiration from video games, you have to make sure you don't overstep the line between inspiration and (in the worst cases) pure plagiarism. One antidote is not to just use other video games as inspiration; instead, watch movies, go to the theatre, read stories, play games outside of video games, play table top games, play board games, etc. You do this so you have a huge pool of reference materials to draw inspiration from to make something new.
Game play rules	A good grasp of what makes game play interesting. There are learned systems that games, not just computer games but board games and traditional games, all follow. You can look at computer games, and games through the ages, and they all have sets of rules and the majority of these rules haven't changed over many years; it's the implementation of these rules that has changed
Games analysis, and analysis of game mechanics	Be able to look at existing games, and see the things that are good about the game, or where it is has flaws. Then ask why is that flawed? Is it because a particular mechanic is inherently flawed in itself or could it have worked if it had been implemented

Title	Description
	differently? Understanding how a game is put together so you can dissect it, and pick out the bits that make star games what they are. What makes it feel good and why? To understand, or try to understand, how games work in their particular genre.
Hand eye co-ordination	Very talented games players sometimes can be very good designers. They have very good hand/eye co-ordination, and often have been able to achieve more in games because of this, which can give then a huge depth of gaming experience on which to draw from when coming up with their own game design ideas.
Historical knowledge of games design	To have extensive historical knowledge about the gaming industry. For example, there are a lot of established game player patterns from the 70's that we still use today, so you need to have an extensive knowledge of the gaming industry and what's come before. Know about games that have already been produced: the ideas, the stories and the game play features.
Market knowledge	Knowledge about the current gaming market. For example, people are currently thinking about casual games, browser based games, etc. Market knowledge allows you to tailor your designs to your audience demographic: the people you are designing a particular game for. You need to know what people are currently attempting to do and what is being worked on at the moment. You need to understand the industry, what we are up to, what the latest game patterns are, and the latest technologies.
Pacing games mechanics to the audience	An understanding of how to pace mechanics, etc. to appeal to the different demo graphics playing your game, i.e. the range between new subscribers, to hard core gamers. For example: players learn rules in one game, and they often take the rules they have learnt there onto the next game. There is a skill in knowing how much you can rely on that being the case and how much your game has to be able to stand alone because it still needs to appeal to people who have never played a game before.
Photo editing	The skills required to edit photography digitally, and other forms of digital image enhancement
Play a lot of games	To have played, and play, a lot of games yourself. For example, you need to play every kind of game; you need to understand the different genres. Get new titles or going back to past things, looking at different genres: not just playing what you are familiar with. There's a certain feel and experience a person picks up from just always playing games. You've got to play a whole range of different types of games, not just the really good games, but games that you know have flaws.
Research skills	The ability to research about games. For example, if you're producing a specific style of game then be able to look for games that have similar styles, similar kinds of stories, etc. Have the ability to research old ideas for previous games, or able to research the market you are designing for, or find sources to develop your game concept. For example, being able to use the web to outsource materials for your games, or being able to collect imagery that can be used to build details into the game environment.
Respect for the player; empathy with the market	Not giving them the same old stuff, because it has worked before. Not accepting a shallow stereotypical view of your audience, but understanding and respecting who you are designing for; having empathy for the people you are making it for. Being able to put a new take on an existing fan base by finding something new within the genre of that game.

Skills for Creativity in Games Design (Part 2) Practitioner Conceptions of Creativity in Games Design.

Skills for Creativity in Games Design (Part 2) Practitioner Conceptions of Creativity in Games Design.

Appendix B:

Continued

Set design/level design	To be skilled in set design, and how to create a plausible landscape from very limited means. To an extent games level design is trying to great an illusion similar to theatrical set design. For example, you are asking how I can get as few objects in there as possible to give it the illusion I want.
Some artistic talent, some programming talent	Some artistic talent and some programming talent are useful. For example, not to the extent of a professional artist, who needs to make artwork all the time, but to the extent that you can understand what an artist is telling you when they are explaining something about their job. The same point applies for programming, and the code side of things.
Stay on top of varied information	A games designer has to think of the story, the environment, the characters and the interactions, the game play features, the user interface, the menu system, the credits, etc. It involves a lot of information to stay on top, and you need to have the ability to stay on top of varied information.
The overall vision	Be able to hold the overall vision of the game. As a games designer, you are in charge of the vision of the whole product. This can require keeping the final product as close to the specific idea you've come up with as feasibly possible.
Understanding narrative and story telling	To understand a little bit about how stories work, understanding narrative and story telling. For example, reading stories, watching films and talking about books films etc., can aid with being able to talk about characters: how they interact, to understand the social situation the characters are placed within. This type of story telling knowledge can be very relevant to the sort of the contemporary games that are trying to make the game experience play as a film.
Using artistic skills to sell your ideas	Artistic skills can help get your ideas across. For example, 12 paragraphs on a page is probably going to turn most people off so you need to get the idea across with a succinct sentence, an image, the way you do a flow chart, etc. The more artistically you can sell an idea, pitch an idea, or just tell an idea, the more you're likely to get a much better response than something that's very dry.
Visualise the game, and player, in your mind	The ability to visualise the game, or versions the game could take, in your mind. The ability to see a game in its finished state in your head. For example, when you are speaking to an artist, they will describe a scene and you can envisage what it is going to be like as a player running down that alley way, or looking out at a vista, etc. Equally, at the same time, you need to be able to take a step back and visualise being a player holding a controller pressing these buttons to get a result, and be able to ask yourself, What is that like? Is that intuitive? Do those buttons infer what I'm getting the player to do on the screen?
Wrapping the game mechanics	The ability to make the wrapping match the rules that you have set up in your mechanics. For example, with the trend towards realism for some games (i.e. realistic wrapping), the mechanics that underlie it generally have to match that realism, but when suddenly something happens the way it doesn't happen in the real world it jars. With those sort of games your need to avoid this jarring effect.
Writing skills	The ability to clearly write down your ideas for others to understand, for example, through a games design document, scripting for games, background stories, pitches, etc. The ability here is to communicate your ideas in a format that fits the conventions of the industry.

Appendix C:

Voting patterns of practitioner participants

Title	Academic Participants								
	p1	p2	p3	p4	p5	p6	p7	p8	Total
Visualise the game, and player, in your mind	*	*	*	*	*		*		43
Games analysis, and analysis of game mechanics			*	*	*	*	*	*	39
Creative facilitator: bring other peoples ideas into the games…		*	*	*	*			*	36
Game play rules	*			*		*	*	*	33
The overall vision	*	*		*	*		*		32
Respect for the player; empathy with the market	*	*				*		*	28
Find inspiration outside of video games	*	*	*	*	*		*	*	27
Some artistic talent, some programming talent					*	*	*	*	24
Play a lot of games		*	*	*	*	*	*		21
Writing skills		*	*			*	*		21
Pacing games mechanics to the audience	*					*		*	20
Attention to detail	*		*		*	*		*	19
Stay on top of varied information			*		*				16
Market knowledge	*			*		*	*		15
Be flexible with game genres, etc.		*	*						14
Research skills	*		*		*				10
A creative approach to the business side of games design						*			10
Set design/level design						*	*		8
Drawing, painting and illustrative skills		*							8
Understanding narrative and story telling		*							7
Using artistic skills to sell your ideas	*			*					6
Anticipate the games market		*							2
Historical knowledge of games design		*							1
Wrapping the game mechanics									0
Photo editing									0
Hand eye co-ordination									0