

Online Gaming as Tool for Career Development

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Abstract. Gaming has undergone a transition from a niche hobby to a part of everyday culture, with the most prominent examples of professional gaming in Korea and the success of World of Warcraft. This transition alongside with the advance of use of the Internet has created a new kind of social environment, commonly known as virtual life. This paper presents an excerpt of the results of a survey investigating this environment with particular regard to the interaction between gaming and career, relationships as well as social groups.

"Man only plays when in the full meaning of the word he is a man, and he is only completely a man when he plays." Schiller

1 Introduction

Today the increasing availability of affordable technology has opened up the big field of a virtual counterpart to real life. Some people only use this technology for problems they used to solve with classic means before, but many do much more. From having an odd "internet friend" to people rarely acting outside virtual reality we can encounter every degree of commitment. People crossing the borders between real and virtual life find themselves in genuinely new situations, which are also very much worth exploration from a scientific point of view.

Gaming is particularly interesting in this regard, as it not only offers faster ways to exchange information, but also simulates a virtual reality with 3D graphics and sounds, to the point of approximating the real world very closely. At the same time gaming is also an activity where many people happily commit time and effort into, sometimes even more than they would on any "serious" activity [1], and thus can be well used as support tool to achieve certain educational goals.

Our research focuses on the areas of career, relationships and social groups in the new suspense between real and virtual life. A common assumption about gaming is that it is detrimental to a steady progress in career, while we can prove that it also can have many assets like stress relief and learning if performed, like any other hobby, in proper quantities. Likewise is the stereotype of the lonely gamer at home no longer true, as many of them today use playing as a very natural part of their social life, effortlessly crossing the borders between the real and virtual world up to the point of

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finding new real life friends and partners from online acquaintances. The initial anonymity of online contacts offers possibilities for genuinely new group interactions like new ways to experience team play in clans and guilds.

The natural way to explore all this in a quantifiable way with as little bias as possible is to conduct a survey on that matter and thoroughly analyse the acquired data. However designing such a survey is a very challenging task as there is very little research done in this area and no established scientific culture, especially lacking established language and definitions.

Hence, we tried to use many established methods from social sciences and psychology to fill the methodical gaps, while using terminology commonly found in the gaming community where necessary. Moreover it is even hard to gather evidential data because the gaming community in itself is very diverse, covering all ages, genders, cultures and interests. Furthermore, listening only to the most vocative posters and bloggers is usually ill advised, as often the unsatisfied customers are the loudest, while the satisfied prefer spending their time on a product they well enjoy.

The rest of the paper is organized as follows. Section 2 will first offer an overview over the already existing related works, as well as those works that helped in designing the survey. In Section 3 the design and execution of the survey will be presented. Section 4 consists of selected results of the study while Section 5 concludes the paper concentrating on particular consequences for TEL (Technology Enhanced Learning) and offering ideas for future developments and further research.

2 Related Works

In spite of many of studies about gaming from the psychological, sociological and cultural points of view, the relation of games to the players and their life has usually been left to the game and entertainment industry. Some field studies show general data about the gamers community, like a worldwide survey [3] which indicates that casual gamers are spending close to 20h per week playing games. Another similar survey [18] reveals that more than one in five players suffers some kind of disability.

Companies also support other research projects which focus on more specific details about the industry and gaming community. For instance [11] claims that considering age, gender and usage intensity, the players of online gaming communities represent a significantly different subgroup than the average internet user, being younger, predominantly male and more frequently engaged online [8].

Another study focuses on the motivation aspect as for example [15] reveals that people play for stress relief and mental balance, which may be used to better serve the customers of gaming industry. Some studies [22] also show that some ways of spending free time (e.g. viewing television) associate negatively with academic performance, while others [10] (e.g. sports) show opposite. The research on the cultural and pedagogical relevance of electronic games [4] shows that children (especially male ones) start playing very early, but at early age computer games do not replace other leisure activities. An article [23] states that perceived usefulness of playing online games decreases as a result of playing just to “kill time”.

3 Survey Design

During the survey design phase the first step was to identify areas of strong influence to people's everyday life. The factors we considered most interesting and suitable for an evaluation for both real and virtual life were interdependency of gaming with career, influences on relationships (both for friends and partners) and differences between social groups in real and virtual life.

Hence we gathered common assumptions about gamers from both non-gamers and gamers and then employed our own experience in the gaming community to sketch rough hypotheses based on a more objective approach towards those assumptions, for example figuring out which amount of gaming marks the point where negative influences begin to show. Afterwards we added some questions we felt were interesting, but not yet answered in any other work done so far in this area, like differences of team play in the real and virtual world. All that then led us to design sets of questions for each of the three aforementioned sections, which we partitioned into further subsections for better structure for both us as well as the interviewees. A header to gather the common basic information concerning both the general as well as the gaming biography of the interviewee was added.

The questions were ordered and formulated according to common principles in questionnaire design [12, 17]. Multiple choice, rating and agreement scales were used over open ended questions. The most notable exception was the free statement for feedback and especially personal stories, which allows us to connect full text information about the life of a person directly to the quantitative data we collected from him/her in the survey and which let us assign him/her to a particular group. Furthermore the principles of neutral, clear formulation of questions as well as the order of filtering were adhered and the usual pre-test was conducted.

As interview method we chose a web based questionnaire because it was not only the cheapest and fastest, but also in this particular case exactly suited our target groups of online multiplayer gamers. The promotion of the survey was done via big community sites, based on their Alexa [2] statistics, both for gaming in particular as well as social networking tools like Facebook, with the additional request to spread the word. Thereby we tried to reach a diverse as possible group of gamers, but of course the problem of bias remains – due both bias in answers as well as bias in choice, as especially many gamers do not frequent general purpose sites and game specific sites are most of the times closed to survey promotions.

To publish the survey we built our own platform [19] based on a common MySQL / PHP / HTML / CSS combination for a couple of reasons. First and foremost none of the existing survey platform sites like Survey Monkey fulfilled all of our requirements and was available without limitation. Especially allowing the interviewees to fill any between one and all three sections, while only having to fill the header once and permitting us to still pertain the connection between the data for later cross-section analysis were only available in highly priced professional systems. Furthermore we gained better and further control about the data as well as having full log access.

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4 Selected Results

The results presented here are based on a data snapshot from 25/06/2008, 18 days after publishing the survey, with answers of 837 participants worldwide, which we used throughout the whole analysis for consistency reasons. The survey itself is still open and has garnered more than 1000 answers in the meantime.

4.1 Demographics

"Married for 24 years, husband and sons (21 and 17) game together with me frequently." [19]

The majority of the participants of the survey are male (78.5%), between 20 and 30 years old (approx. Gaussian distribution: $\bar{O} = 24.4y$; $\sigma = 6,6$; 2% > 40y) and usually well educated (Fig. 1) for their current age. These results are similar to those found by other studies [14].

The most favored genres are strategy and action shooters with over 70% and RPGs with still over 60% (Table 1), which are perceived as the most typical multiplayer online genres. Still about half of the participants play adventure and action arcade games regularly, although it should be noted that most of the titles in these genres are either single player games or non-online multiplayer games.

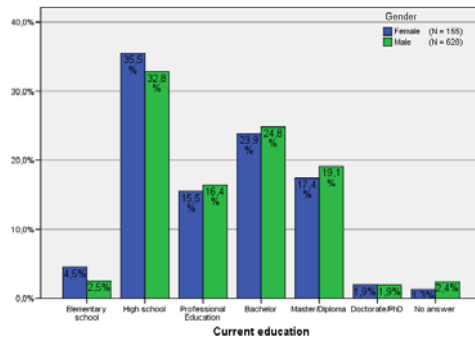


Fig. 1. Education of the participants

	Responses	Percent
action (arcade)	385	48.7%
action (shooter)	554	70.1%
adventure	446	56.5%
simulation	338	42.8%
RPG	489	61.9%
sports	299	37.8%
strategy	589	74.6%
board games	201	25.4%
other	159	20.1%
Total	3460	438.0%

Table 1: Preferred genres

4.2 Learning by playing

"Games like Final Fantasy VII/VIII allowed me to use advanced strategies from a young age, again, helping me in a way school never could. I would say in my first five years of gaming, I learned at least twice as much as I did when I attended school." [19]

"Video games had much effect on my creative and I might say artistic side. It is because of them that I am now on Graphical design university, and studying and learning programs like Maya and 3ds max." [19]

A good way to measure the impact of an activity on someone's career is to investigate how many transferable skills he/she learned during that activity. We

provided a selected choice of these general competences [9] to the participants, to which we added a number of typical gaming and computer related skills (hand-eye coordination, programming, graphic/video design).

Hypothesis: Players who acquired more transferable skills by gaming noticed a positive influence of gaming on their careers.

Obtaining a correlation of 15.8% between a higher number of learned skills and a more frequent positive influence on the career (Table 3), we observe that the hypothesis can be considered significant even on an $\alpha = 1\%$ level.

It is interesting to note, that not only the two expected skills for computer gaming (hand-to-eye coordination and strategical thinking) score high with over 70% (Table 4), but foreign language skills are only slightly below that number, being a manifest to the new interconnected virtual world. Team play with ~50% and communication with ~40% prove the importance of the multiplayer aspect. Coping with stress with again ~40% and no skill being below 25% are both surprising facts. Intriguingly the spread of skills is similar for all different kinds of genres.

	Always (N = 6)	Often (N = 47)	Sometimes (N = 163)	Rarely (N = 212)	Never (N = 192)	Total
0	0.00 %	2.13 %	0.61 %	4.25 %	14.06 %	50
1	0.00 %	0.00 %	1.84 %	4.25 %	9.38 %	31
2	0.00 %	2.13 %	5.52 %	7.55 %	14.58 %	54
3	16.67 %	2.13 %	10.43 %	13.68 %	16.15 %	79
4	0.00 %	12.77 %	19.63 %	22.17 %	17.71 %	116
5	16.67 %	6.38 %	23.31 %	18.87 %	8.85 %	98
6	0.00 %	6.38 %	11.66 %	12.26 %	10.94 %	71
7	0.00 %	21.28 %	4.91 %	7.55 %	2.60 %	39
8	0.00 %	10.64 %	7.36 %	4.25 %	3.65 %	32
9	0.00 %	23.40 %	5.52 %	1.42 %	0.52 %	24
10	33.33 %	4.26 %	1.84 %	2.36 %	0.52 %	14
11	0.00 %	6.38 %	3.68 %	0.47 %	0.52 %	11
12	33.33 %	2.13 %	3.68 %	0.94 %	0.52 %	12

Table 2: Table positive influence vs. number of skills ($\bar{X} = 4.6$; $\sigma = 2.7$; median = 4)

Spearman's rho		Positive Influence
Number of Acquired Skills	Correlation Coefficient	0.397
	Sig. (2-tailed)	0.000
	N	593

Table 3: Correlation between positive influence and number of acquired skills (based on table 2)

	Responses	Percent
<i>foreign language</i>	389	67.0%
communication	221	38.0%
team work	286	49.2%
leadership	178	30.6%
intercultural awareness	166	28.6%
<i>strategical thinking</i>	419	72.1%
<i>hand-to-eye coordination</i>	409	70.4%
stress coping	229	39.4%
(self) critical abilities	156	26.9%
acting independently	147	25.3%
programming	156	26.9%
graphic/video design	150	25.8%
Total	2906	500.2%

Table 4: Distribution of skills acquired

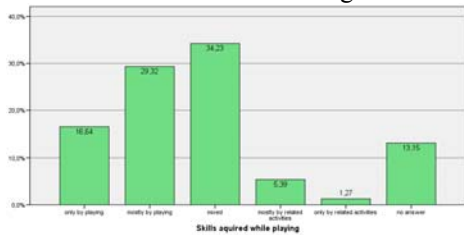


Fig. 2. Ratio of skills acquired while playing

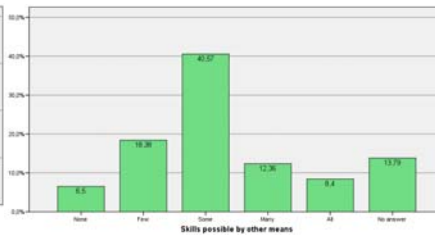


Fig. 3. Skills easier acquired by other means

The players acquire those skills either by playing itself, or by playing and some related activities like clan management or website building, rarely only be related

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activities (Fig. 2). That together with the fact that most of the participants selected that they could have learned only some of the skills easier by other means, and almost none selected “all” (Fig. 3), clearly shows that gaming can serve as a valuable activity beyond only an entertaining hobby, better than TV consumption [22] and comparable to sports [10].

4.3 Play time and career effect

“I skip class in my bachelor for one year because I played multiplayer game. Half year for Diablo II & half year for Counter Strike. Unique experience, but I don't want to do that mistake again. :)” [19]

We proved that gaming can very well have a tangible positive influence on the career of the players, which can manifest by acquisition of skills, for example stress relief [20] or social networking, just to name some. We show now that gaming itself is not the problem, but that gaming like any other hobby can suffer from misuse [7]. The amount of play we consider still reasonable is no more than 20h a week, which is the amount of time of a part time job. If properly distributed throughout the week, 20h per week should not impair any other life needs.

Hypothesis: When playing only reasonable amounts of time, gaming will have no bad influence on the career of a gamer.

		Overall influence on career/school					Total
		Very negative	Negative	None	Positive	Very positive	
Unreasonable (≥ 20 h / week)	Count	14	83	85	67	11	260
	% of Total	3.2%	18.9%	19.3%	15.2%	2.5%	59.1%
Reasonable (< 20h / week)	Count	2	35	93	47	3	180
	% of Total	0.5%	8.0%	21.1%	10.7%	0.7%	40.9%
Total	Count	16	118	178	114	14	440
	% of Total	3.6%	26.8%	40.5%	25.9%	3.2%	100.0%

Table 5: Overall career influence against compared to gaming time in problematic periods

Comparing the given χ^2 value to the χ -distribution yields that the hypothesis can be considered significant even on an $\alpha = 1\%$ level (Table 6). We explored a similar hypothesis to evaluate, whether no more than 30h per week would still not negatively impact the career of gamers in a significant manner. Obviously this is not the case and gamers, who play noticeably more than 20h per week, endanger their career progression, which is in line with [3].

An interesting observation now is the differences in the player behavior in which games they play when noticing a positive and negative influence. While RPGs seem to have both positive and negative influences with being over 50% in both cases, action shooters drop by almost 10% comparing the negative

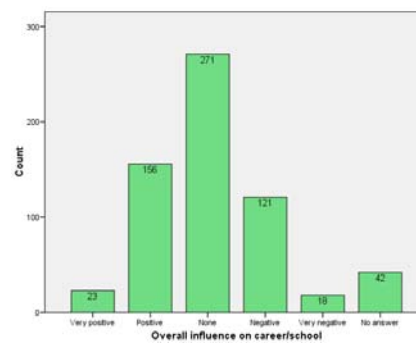


Fig. 4. Overall influence of gaming on career

to the positive influence, while strategy, adventure and simulation games seem to have a distinctly more positive influence, all of them raising by about 10% compared to their negative influence values (Fig. 5).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.186	4	0.000
Likelihood Ratio	24.347	4	0.000
N of Valid Cases	440		

Table 6: χ^2 -test of Table 5

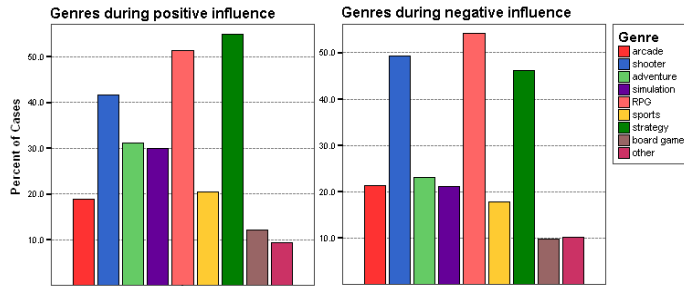


Fig. 5. Comparison of games played during times of positive and negative influence

4.4 Motivations

"I'm a terrible sport player, so I enjoy most teamwork in games. Teamwork, especially in large group, is much more accessible and easier in virtual world than in real life. Large team raid rocks when everyone is trying their best." [19]
 "I enjoy social gaming but know that it's not reality. I can switch off myself when I switch off the computer." [19]

Asking for the motivation of playing video games, we found that the number of people who play to educate themselves is really low (~10%), in fact it is by far the least named one of the concrete reasons (Table 7). People mostly play to relax (~80%) or to simply enjoy it (>90%), but also quite some play for the challenge, to get away from their lives, because they are bored or for social interaction. So with the prospect of learning something someone will not start a game that fast, but it has to promise a lot of fun and must not stress the player.

	Male	Female
Education	9.6%	12.0%
Fun	94.9%	92.8%
Relaxation	79.4%	81.9%
Social interaction	27.0%	39.8%
Boredom	42.4%	48.2%
Challenge	53.7%	45.8%
Get away from life	34.4%	50.6%
Other	7.1%	9.6%

Table 7: Motivations by gender

The second fact worth mentioning is that the motivations to play do not differ much between male and female players, although we observe that men prefer challenges while women have a little stronger focus on social interaction and getting a change from everyday's life.

Team play is a crucial part of multiplayer games as one normally not only plays against other players but also allied with them. We asked what the participant would consider important aspects of team play in real life and in virtual life, with special interest to those answers that were given exclusively for virtual or real life.

We discovered that most of the aspects were considered important quite more often in both virtual and real life than in just one of them (Table 8, column 'ratio').

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We had expected that virtual teams had some distinct differences to those in real life, but that hypothesis was refuted by our results. Furthermore among the exclusive answers for only real or virtual life, usually real life was elected much more often, which means that according to our participants for real life teams there are more important aspects to consider than for virtual teams.

	both	real life	virtual life	Ratio (both vs. RL+VL)
Comradeship	36.4 %	18.7 %	9.8 %	1.3 : 1
Joint effort	42.3 %	13.8 %	9.8 %	1.8 : 1
Not letting others down	36.2 %	16.1 %	8.6 %	1.5 : 1
Shared victory	40.2 %	9.3 %	16.1 %	1.6 : 1
Overcoming conflicts	22.7 %	17.1 %	11.4 %	0.8 : 1
Rely on each other	39.0 %	17.8 %	8.6 %	1.5 : 1
Identification	11.7 %	9.3 %	7.9 %	0.7 : 1
Defined responsibilities	19.4 %	16.1 %	15.0 %	0.6 : 1
(Other)	(6.8 %)	(4.4 %)	(3.0 %)	

Table 8: Important aspects of team play in real and virtual life

4.5 Conflict handling

"I'm not really one for a grand amount of social interaction in real life, but in video games I can sorta do an alterego kinda things, since those people will never meet me, and my actions will have no negative consequences." [19]

Coping with conflicts is a very important skill one has to acquire during his/her life. And the only way to learn how to deal with conflicts is to engage and solve them. We asked what the participant would

	both	real life	virtual life	ratio (both vs. RL+VL)
Challenge	28.7%	7.9%	31.1%	0.7:1
Seeing others lose	4.2%	3.0%	15.7%	0.2:1
Justice	19.2%	37.6%	6.3%	0.4:1
Victory	19.6%	4.2%	32.7%	0.5:1
Blow of steam	6.8%	7.2%	15.7%	0.3:1
Dislike of someone	10.7%	17.3%	8.4%	0.4:1
(Other)	(5.8%)	(7.2%)	(4.7%)	

Table 9: Reason to engage in a conflict in real and virtual life

consider a reason to engage a conflict in real life and in virtual life, again with special interest to those answers that were given exclusively for virtual or real life.

It can clearly be seen that the reasons differ quite much, as we expected. In real life the need for justice is the main

reason to engage a conflict while in virtual life

challenge and victory are the ones mentioned most (Table 9).

It fits to the fact that in contrast to real life in video games you can easily match yourself with someone without real consequences. Hence, video games may represent a good

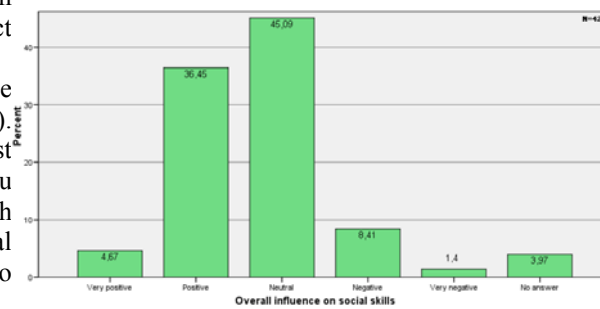


Fig. 6. Overall influence of gaming on social skills

opportunity to learn to deal with conflict situations, because they are much more

easily engaged in virtual life. The column 'ratio' of table 9 shows that the reasons are very distinct for real and virtual life.

So we saw that video games may improve certain skills of the players and – if used with care – can have an overall positive influence. When asked about the influence of gaming on social skills in general, the feedback was largely neutral to positive. This stands in contrast to common opinions about gaming and is likely related to the anonymity of online gaming providing a safe environment to develop these skills.

5 Conclusions and Outlook

We conducted a survey among players of video games to find out about the influences of virtual life on real life and vice versa. Our study helps to enlighten the new social environments in the virtual world and their interaction with established ones in the real world, with a particular focus on the interaction between gaming and the areas of career, relationships and social groups. The approach to employ the tools of social sciences and build on related works proved to be successful and helped to create a web based survey, which provided input from already over 1000 gamers worldwide up to today.

We showed not only the positive influence of gaming on the career of the players if done in reasonable amounts, we also evaluated differences in social behavior by the example of conflict engagement and team play and thereby were able to deduct conclusions for a better implementation of TEL.

The most important outcome of our study is the proof that video gaming is not only a tool for “learn through play” [5, 21], but also holds merit in its own right to provide entertainment with additional benefits (“edutainment” [16]). However it is still important to keep the heightened addiction problems in mind, as overuse of gaming will cause problems as it is the case for any other activity, as well as to carefully evaluate the employed genres for possible problems.

Our investigations showed the relevance of considering the target group when creating educational games. The target group of online gamers differs not only clearly from e.g. regular internet users [8, 11], but also offers a chance to reach social groups that often have a hard time learning [18]. At the same time our demographics show that most of the players have a comparatively high education level and thus will seek games designed for their particular demands. While learning through playing is perceived as an enhancement to education [13], it is important to keep in mind that gamers do not play to learn, although they are likely not to mind the added benefit of learning through the educative and/or narrative aspect of it [6]. As such, a game is still a game, first and foremost.

The focus of edutainment should be on transferable skills, as the connection between the game played and the desired learning successes as in [5] is normally unknown. While some skills are already well supported by gaming as is, more are very well possible but will need facilitation to achieve. In particular storytelling games should use their inherent setup of offering many different and interesting conflict situations that players can overcome.

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All that hints at the fact that gaming and its community create a whole variety of new relations, especially in the social area, and with them many new opportunities. Thus the concept of a virtual life is truly merited.

The data we gathered in our survey provides many more possibilities to explore that realm, and its results will disprove more common negative assumptions about gaming and can serve as basis to launch further and deeper research.

These immediate and future conclusions should be adhered in future game design, as they should actively support development towards sounder and broader integration between real and virtual life, for which [24] raises an interesting satirical vision.

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