Videogames and L2 Learning Opportunities

Does the Amount of Digital Gaming Show in Increased English Proficiency Among Finnish Upper Comprehensive School Students?

Bachelor's thesis

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Tiivistelmä – Abstract

Digitaalisten pelien pelaaminen on edelleen varsinkin nuorten suomalaisten keskuudessa yleinen harrastus. Mediana pelit tarjoavat monille kosketuksen englannin kieleen vapaa-ajallakin, ja tällaisesta informaalista koulun ulkopuolisesta englannin kielestä on tutkimusten mukaan suurta hyötyä kieltenopiskelijalle.

Tässä tutkielmassa tarkasteltiin keskisuomalaisten yhdeksäsluokkalaisten (N=34) videopelien pelaamisen yhteyttä englannin kielitaitoon, jota arvioitiin oppilaiden kolmen viimeisimmän englannin kurssiarvosanan keskiarvolla, sekä pienellä synonyymien yhdistelytestillä. Oppilaiden videopeliharrastusta sekä muita koulun ulkopuolisia englanninkielisiä harrastuksia kartoitettiin kyselyllä. Kysely toteutettiin oppilaiden englannin tunnin aikana.

Vaikka aiemmissa vastaavissa tutkimuksissa pelaamisen ja englannin taidon välillä on pystytty löytämään positiivinen korrelaatio, tässä tutkimuksessa näin ei käynyt. Tulokset osoittivat, että vaikka paljon pelaavat oppilaat näyttivätkin käyttävän englannin kieltä paljon enemmän pelatessaan kuin vähän pelaavat oppilaat, heidän englannin kielen taitonsa eivät kuitenkaan olleet yhtä korkealla tasolla. Korrelaatiot pelaamiseen käytetyn viikottaisen ajan sekä englanninkielen arvosanojen ja synonyymitestin tulosten välillä olivat negatiivisia, joskaan eivät tilastollisesti merkittäviä.

Tutkimustulosten luotettavuus ja yleistettävyys kärsivät pienestä otannasta ja siitä, että pelaajat jakaantuivat melko paljolti vähän pelaaviin tyttöihin ja paljon pelaaviin poikiin. Tyttöjen yleinen parempi koulumenestys saattoi vaikuttaa ratkaisevasti tuloksiin. Mikäli luotettavampaa tietoa digitaalisten pelien positiivisesta vaikutuksesta kieltenoppimiseen Suomalaisten yläastelaisten keskuudessa halutaan saada, on kerättävä tietoa suuremmalta joukolta.

Muita tietoja – Additional information

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1 Introduction

Digital gaming on various electrical systems – computers, game consoles and mobile devices to name a few – continues to be a popular free-time activity in Finland, especially among young people (Mäyrä and Ermi 2014). Besides watching television, listening to music, browsing the internet and other common hobbies it is one of the most popular pastime activities where the participants often come into contact with the English language via different textual and spoken elements that are integral parts of the game. Many online-based games even have the possibility of interacting with others, making it possible for players to write messages or talk to each other using a microphone. As digital games are developed all over the world, there are of course many other languages involved. Nevertheless, English is undoubtedly one of the most common lingua francas in the domain of gaming.

English in all these informal and out-of-school situations could be called extramural English, which is a term coined by Sundqvist (2009: 1). Extramural English can be considered an important resource for learners, as activities outside the classroom might offer learners opportunities for learning aspects of the language that they would not necessarily learn in a school environment, such as colloquialisms, accents, and vocabulary specific to certain contexts. In her study about the impact of extramural English activities on the English skills of young Swedish learners of English, Sundqvist (2009: 204) concludes that there is a significant correlation between the amount of time spent on extramural English and English oral proficiency and vocabulary knowledge.

Many digital games nowadays can be considered a rich source of extramural English, and therefore their beneficial nature in terms of second language learning is worth studying. The purpose of this paper was to carry out a small scale study involving Finnish upper comprehensive school students and their video gaming habits, and to see whether there is a connection between the amount of time the students spend on gaming and their L2 English proficiency. In addition, the students were asked about their opinion on what language related aspects they think they have learned from playing games. Some other extramural English activities and their connection to L2 English proficiency were also analyzed.

2 Digital games and language learning

Despite the popularity of digital games, research into the phenomenon of language learning or acquisition via the media of video games has only recently started attracting academic attention in the field of computer assisted language learning (CALL) (for a review, see e.g. Peterson 2013). Indeed, the value of digital games is nowadays recognized by a number of researchers, as they can be seen as offering a rich linguistic environment for players of any age, and plenty of affordances for language learning or acquisition to take place in. Some of the CALL research has concentrated on the learning outcomes of playing games that are specifically developed for language learning and teaching purposes. The present study, however, is more interested in the informal and extramural context of digital gaming.

2.1 Connection between digital gaming and English skills

Some quantitative studies on the connection between playing commercial video games and students' English proficiency have been conducted. Example studies presented in this paper are Sylvén and Sundqvist (2012b) and Uuskoski (2011). Both studies had similar results even though the informant groups were quite different. Firstly, Sylvén and Sundqvist (2012b) studied Swedish fifth graders (N=86, aged 11-12), their digital gaming habits and language skills in reading and listening comprehension, and vocabulary knowledge. Their data was gathered with a questionnaire and a language diary, and the students' vocabulary skills were measured with a test that consisted of word recognition and production tasks, while their listening and reading comprehension results were obtained from the mandatory national test of English. After their analysis, Sylvén and Sundqvist concluded that frequent gamers consistently outperformed moderate gamers and non-gamers in each skill. It was also noteworthy that even moderate gamers (0-5 hours of gaming per week) fared better in the tests than those who did not play games at all. The only significant gender difference was that boys scored better in the vocabulary test than girls did.

Secondly, Uuskoski (2011) studied Finnish high-school students (N=495, aged 16-20) on how much time they spent on gaming per week and whether the amount correlated with higher English course grades. The data was gathered via a questionnaire where the students reported on their extramural English habits and typical English course grade. The analysis showed a statistically significant correlation between the amount of time spent on gaming and higher English course grades (Uuskoski 2011: 31). Hardcore gamers (15+h/week) had a typical English grade average of 8.79, while non-gamers had 7.28. Between these groups Uuskoski identified casual gamers (0-

5h/week) and active gamers (5-15h/week), whose typical grades on average were 7.68 and 8.10 respectively. Of course, video gaming was not the only significant factor in explaining the students' grades. Uuskoski also identified several other extramural English activities that showed significant correlation, such as browsing the internet mainly in English, watching videos without subtitles and reading comics and magazines in English (Uuskoski 2011: 37). There were also various differences between the extramural English activities that boys and girls preferred, which showed, for example, that gaming was not as important a factor for explaining the girls' grades than in boys' case (Uuskoski 2011: 48).

Despite the "definite and undeniable connection" between gaming and grades (Uuskoski 2011: 57), the authors are careful not to overgeneralize their findings or state that any explicit causation between playing digital games and higher English skills. It is possible, for example, that frequent gamers already had higher language skills, which allowed them to play the games in the first place (Sylvén and Sundqvist 2012b: 316). Furthermore, several important factors concerning language learning, such as motivation and language aptitude, and their connection to the students' performance, could not be measured in the studies. As to why some gamers, despite playing frequently, did not show as high English skills as others, one possible explanation is discussed. Namely, in both studies the students were also asked about the genres of the games they played, revealing that there was a difference between game genres that students with higher or lower English skills preferred. In Uuskoski's study the former group included, for example, role-playing games and Massive Multiplayer Online Role-playing Games (MMORPGs), whereas the latter included, for example, simulation games and browser games (Uuskoski 2011: 30). Sylvén and Sundqvist reach the same conclusion regarding the difference between boys' and girls' vocabulary performance:

> … we argue that it is not gender per se that explains this difference …, but rather the type of game favored among boys and girls respectively … - - we saw that the boys did not only engage in digital gaming significantly more than the girls; they also played other games than the girls. While the girls typically preferred single-player simulation games, the boys chose first-person shooter or multiplayer games, often MMORPGs… (Sylvén and Sundqvist 2012b: 315)

As these two studies have only concentrated on either comprehensive school or upper-secondary school students, there is naturally a large gap in research when it comes to learners from different backgrounds and school history. For example, Finnish upper comprehensive school students represent quite a different demographic compared to the ones in previous studies, and their language learning motivation and habits of gaming might differ greatly, for instance. More research

among different learners is indeed needed if any generalizations about the connection between digital gaming and English proficiency are to be established.

2.2 Language and language learning in games

It is indeed important to acknowledge that different types of games may offer different kinds of linguistic affordances and challenges to the player and, as a result, different language learning outcomes to varying degrees (for one possible analysis of language learning opportunities in several kinds of games of different genres, see Lukkarinen 2013). In particular, Sylvén and Sundqvist (2012a) argue that MMORPGs are especially beneficial for language learners, as they provide a similar environment for language use as Content and Language Integrated classes do. Upon entering either a CLIL class or the world of an MMORPG students or players are *immersed* in an *authentic* language environment where they are *motivated* to both use and understand the language. These learning environment features can be considered essential for L2 acquisition (Sylvén and Sundqvist 2012a: 115-117).

MMORPGs certainly deserve the attention they have lately been receiving (see Peterson 2013: 56-60, 78-83), and so could possibly be said about certain other genres as well. The results from Sylvén and Sundqvist's and Uuskoski's studies clearly show that certain genres consistently seem to come up when looking for types of games that show the closest connection to higher English skills. However, by looking at the game genre alone and only identifying the affordances and challenges that typical representatives of that genre may offer the player, one risks neglecting the most important agent in the language learning and acquisition process: the player himself. Although it could be argued that player participation is the central element in defining a game's genre (Wolf 2008: 259), it is certainly not participation in the linguistic sense that is meant, but rather the physical and mental in-game activity in response to the various gameplay mechanics that are controlled by the game's algorithm and instanced in the interface and graphics of the game. How the player interacts with the language in a video game can vary greatly between different game genres, but also between games of a similar genre. For example, many roleplaying games nowadays have a togglable feature called "quest arrow", which effectively shows the player where to proceed next, making it unnecessary for the player to even comprehend the instructions given to him or her. Furthermore, gamers themselves are different and may play the same games differently: some players might choose to follow the game's plot attentively, while others might not pay so much attention to it. Even when it comes to multiplayer games, some players might still prefer to play them independently and not take part in any co-operative activities. Finally, determining a single

genre for a game is not always straightforward, as many examples of sub-genres and genre-mixing games nowadays illustrate. In conclusion, there is plenty of reason to assume that in order to fully understand the connection between games and language learning it is necessary to look beyond the genre of a game and instead look closer at the role of the gamer as a language user during activity of gaming.

No specific framework for the possible activities, challenges and affordances during gameplay has been suggested, but with extensive knowledge of gaming one is fairly simple to compose. While the framework used in this study is by no means comprehensive, it is suitable for the general purpose of identifying different types of gamers by their language usage. This being the aim, the hypothesized situations in which English could be used in a video game or how one could be influenced by the English in a video game, leading into increased skills of English, could be summarized as shown in Table 1. Possibilities for gaining language input include encountering new vocabulary items, following the story and dialogue in the game, producing in-game dialogue with dialogue options, solving puzzles and completing missions or quests using game-provided instructions, and using game-related resources outside the game, such as walkthroughs and guides. Furthermore, possibilities for language output include interaction with other players by speaking or producing textual messages in contexts such as everyday discussion and chatting, or in a more goal-oriented in-game activity. Players may also belong to an in-game, online or offline activity group that uses English as a lingua franca for communication.

Table 1. Gaming-related activities and situations creating affordances for language input and output

Possibilities for gaining language input through	Possibilities for creating language output through
Encountering new vocabulary items Following the story of the game Following dialogue in the game Producing dialogue Solving puzzles Completing missions or "quests" Using game-related resources outside the game[1]	Everyday interaction, chatting with other players Goal-oriented in-game activity and interaction with other players Membership in an in-game group where English is used as a lingua franca

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[1] Although help resources such as walkthroughs and guides are not usually an internal part of a game, there is often a "fuzzy boundary" (Steinkuehler 2007: 302-303) between the virtual in-game world and the real world.

2.3 L2 Learning theories in relation to video games

The often-cited research on the topic of language input and language acquisition is Krashen's famous input hypothesis and the idea of comprehensible input (see e.g. Krashen 1983). The hypothesis states that for language acquisition to take place, the learner has to be provided with language input that is just above his or her current proficiency level. By making this input comprehensible to the learner, he or she is then able to process this input and acquire it as a part of his or her own language repertoire. Although Krashen's hypotheses have been criticized, the input hypothesis helps us perceive one plausible explanation as to why video games are considered so great for contributing to language acquisition. The multimodal nature of video games is apt to enhance the comprehensibility of almost any in-game language input, making scaffolded learning of new vocabulary, lexical structures or even grammatical items possible.

As popular as the comprehensive input hypothesis is for supporting the role of language input in language learning, there is no single equivalent for justifying the role of output. Nevertheless, Swain's (Swain and Lapkin 1995) comprehensible output hypothesis is one such attempt. According to the hypothesis, whenever language users produce language but fail to deliver the intended message, they realize that they must modify their output in a way to make it comprehensible, and at the same time they learn something new about the language. In this sense, especially online video games excel at providing ample chances for player interaction that could be motivated by, for example, a need to accomplish a common goal, which makes comprehensible output a crucial part of the interaction and may spark, for example, a negotiation of meaning to occur (Dixon 2014: 72-80). The comprehensible output hypothesis has, in turn, received its share of criticism, but nevertheless, there is more than enough reason to believe that language output can lead to increased English competency. Larsen-Freeman (2003: 100-114), for example, argues convincingly that language output has an important role in the language learning process, and that language input alone is not necessarily enough to reach a high level of proficiency.

The above chapters have merely been a scratch at the surface when it comes to theoretical rationales for research involving gaming and language learning, as there is no space for a much more detailed account of it. For further reading on CALL in the specific context of video games, see for example Peterson (2013) and Reinders (2012).

3 The present study

3.1 Research questions

For this paper a small-scale quantitative study was carried out on the relationship between digital gaming and English proficiency, as well as on how different habits of language usage during gaming related to this, if anyhow. The research questions were as follows:

1. Is there a connection between the amount of time the students spend playing video games and their English skills?

2. Are there differences in the kinds of affordances for language input and output that frequent and non-frequent gamers encounter?

3. Do the students think that playing digital games has improved their English skills, and if so, how?

4. Are there connections between other Extramural English activities and the students' English skills?

The first and fourth research questions were related to the connections between English profiency and the frequency of gaming as well as other extramural English activities. Since playing digital games is only one possible extramural English hobby, it is important not to neglect the possible influence of other out-of-school activities. Next, the second research question was concerned with the different activities and habits of gaming, and the purpose was to see whether there were any significant differences between the more and less frequent gamers in terms of what they actually do inside the games they play, and whether this could help explain the possible differences between these groups' English proficiency. And lastly, for the third question the students themselves were asked whether they thought their English skills have been improved as a result of gaming. As this study did not attempt to prove that gaming actually leads to increased English proficiency, the students could at least offer their opinion about their experiences.

3.2 Methods

Informants for the study consisted of a sample of 15 to 16 year old ninth-graders (N=34) from an upper comprehensive school located in Central Finland. These students were chosen because the previous research presented above has left a gap in this particular age group, and due to the small

scale of this study it was necessary to limit the demographic. The students came from two groups; one consisting of both boys and girls and the other of girls only.

The data was collected during the students' English lesson with a questionnaire and a vocabulary test stapled together (see appendices A and B), and the students had approximately 20 minutes to complete them both. Their answers were coded into numerical form (e.g. when answering to the question "How often do you chat in-game using written means?", "Rarely or never" was coded as 0, "Once or a couple of times in month" as 1, "Once or a couple of times in week" as 2, and "Daily or almost daily" as 3) and the data were input into the SPSS program. As the research questions state, the objective was to look for connections between different phenomena, which in practice meant doing a correlation analysis using Spearman's rank correlation coefficient due to the relatively small size of the sample.

The questionnaire used in the study was partly designed after that of Uuskoski (2011, see Appendix B), but modified for the purpose of this study. In the questionnaire, the students reflected on their video gaming habits and reported on how much they play video games per week and what kinds of affordances and demands they encounter, how they respond to them, and how aware they are of the changes in their English skills after playing. The question about the types of games (genres) played most by the participants was also included. In addition, the students were asked to report their three latest English course grades they had received in school, and the average served as an additional variable for determining their overall English proficiency.

The vocabulary test was designed to show the differences in the students' vocabulary skills, and not to measure the absolute size of their vocabulary. In it, there were four categories of words – nouns, adjectives, verbs and adverbs – and in each category the students were asked to connect words from a list of 12 options with their closest synonym on a list of 8 target words. In total there were 48 distractors and 36 target words, which were chosen from a list of 5000 most common American English words (available for free at http://www.wordfrequency.info/), which includes words from a variety of sources: spoken data, magazines and newspapers, as well as fictional and academic texts. Thus, it is unlikely that words that have a particular bias towards gaming related vocabulary were chosen. Half of the target words and distractors were selected from the range 4500-5000 and half from the range 3000-3500 in order to provide students with both more common and rarer words, so the differences in their vocabulary knowledge would surface more clearly.

Limiting the study to only receptive vocabulary knowledge and not including, for example, other areas of vocabulary knowledge, listening, speaking, writing or grammar skills was also due to the

small scale of this study. Still, vocabulary knowledge can be considered one of the most important aspects of learning a foreign language, and vocabulary was also the area that most gamers in Uuskoski's study felt they had improved in after playing digital games (Uuskoski 2011: 33). Vocabulary testing also involves several methodological questions as well as the fundamental problem of what "knowing" a word means. In this test the participants were only asked to identify the closest synonym for the target words (e.g. *rifle-weapon*), which meant that the student did not necessarily have to even know what *rifle* means, only that it is some sort of a weapon.

4 Results and discussion

As the same quantitative scale was used to measure the amount of time spent on playing games as in Uuskoski's (2011) study, the participants in the present study were also grouped in identical manner into non-gamers (those who did not play at all), casual gamers (those who played 0-5 hours per week), active gamers (5-15 hours per week) and hardcore gamers (15+ hours per week). The questionnaire results showed clearly that it was the boys who spent the most time per week engaging in digital gaming and girls the least. All of the hardcore gamers (N=7) in this sample were boys, and conversely, all of the non-gamers (N=4) girls. In the group of casual gamers (N=17), which accounted for half of the sample, there was only one male student. The active gamer group was the only one that had the same number of boys and girls (N=6). The majority (83%) of all the participants reported that the games they played were either exclusively or mainly in English.

The small size of the sample of participants will obviously limit the reliability of the data, and the homogenous distribution of boys and girls within the groups of non-gamers, casual gamers and hardcore gamers might also have an effect on the results. A one way ANOVA test also confirmed that there were no statistically significant differences in English grades ($F(3,29)=.917$, $p=.445$) or vocabulary test results ($F(3,30)=.703$, $p=.558$) between these gamer groups, suggesting that the amount of gaming was not the decisive factor that would have explained the students' grades and test scores.

4.1 Connection between the time spent on gaming, English grades and vocabulary test scores

In the present study no positive correlation was found between the amount of time spent playing games and the students' English average grade or their vocabulary test score. Table 2 presents each gamer group's average English course grade and average test score.

Table 2. The four gamer groups' average English grades and test score

Group	Average English course grade (SD)	Average Test score (SD)	N
Non-gamers	8.66 (0.94)	7.25 (5.9)	4
Casual gamers	8.04 (1.07)	5.06 (4.4)	17
Active gamers	7.77 (1.35)	7.67 (7.8)	6
Hardcore gamers	7.58 (0.79)	4.29 (2.7)	6/7[1]

The results show that it was actually the non-gamer group who got both the highest school grades and highest test results in this particular sample, and that students who played the most had both the lowest average grade as well as test score. Even casual gamers fared better than active gamers in terms of English grades, but it seems that active gamers performed best in the vocabulary test. This, however, was largely due to one student out of the six active gamers gaining a much higher test result than the rest (the highest in the sample, in fact), raising the group's average score greatly. Thus, the correlation coefficients between the time spent on gaming per week and English grades and vocabulary test scores were $r=-.280$ and $r=-.065$ respectively. Both, however, were statistically non-significant.

The results seem to be completely opposite of what previous research on the same topic has yielded (Uuskoski 2011, Sylvén and Sundqvist 2012a). The possible explanations for this are numerous. For one, just because a positive connection between gaming and English skills has been found with groups of Swedish fifth-graders and Finnish upper secondary school students, this does not necessarily mean that a similar result would be found within a group of Finnish upper comprehensive school students. After all there are most likely several differences between these groups of students, for instance in the students' socioeconomic status or learning motivation, and there are also almost certainly differences between this study's two groups of students, and especially between boys and girls. The girls-only group consisted of students who had enrolled in the school's musically oriented class, which might reflect or affect their overall school performance. The fact that girls usually perform better than boys in school is a widely documented fact (Freudenthaler, Spinath and Neubauer 2008: 231-233), and it is a shame that in fthis study both male and female participants were so unevenly distributed in the four gamer groups so that

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[1] One student did not report their English grade but filled in the test

observing the relationship between English skills and gaming within one gender group at a time would be meaningful.

Girls' better school performance does not, however, directly help explain the difference in the vocabulary test scores of non-gamers and hardcore gamers. One obvious factor would be that non-gamers had much more time to complete the test, as they were not required to answer a majority of all the questionnaire items. The vocabulary test was, it must be said, very challenging for these students, as it was designed to be. But it was also designed to show the differences in the students' vocabulary level, in which it clearly failed. The highest amount of correct answers out of 36 items was 22, but the mean result only 5.6. Half of all students could only connect four or less synonyms correctly. Given that gamers had a significantly shorter time to ponder the test and that they were faced with words most of which they might not have even seen before, many may have simply given up on trying.

The following sections are dedicated to examining different gaming related activities and habits of language use, different game genres, as well as other Extramural English hobbies, and their connection to frequent gaming, English grades and test scores. In addition the students' opinions on how they feel playing games has affected their English skills will be reported.

4.2 Connection between gaming related activities and habits and English grades and test scores

There were several gaming related activities and habits found that correlated positively and significantly with the amount of gaming. This would imply that frequent gamers choose to engage in some activities more often than those who play little. In Table 3 are shown the activities and habits which involve gaining language input, and their connection to frequent gaming.

Table 3. Spearmann's rank correlation coefficients between gaming related activities and habits and the amount of gaming, English grades and vocabulary test results.

Gaming related activities and habits	r1	r2	r3
I play games that have a plot and narrative	**.674****	-.062	-.082
It is important for me to understand the plot of a game	**.387***	-.193	-.090
I notice that I encounter unknown words when I play	.087	-.202	.083
I use a dictionary as a help when I play	.111	.328	.180
I am able to deduce the meanings of new words with the help of contextual clues such as images	-.092	**.468***	.242
I complete missions and quests according to instructions	**.608****	.100	.135
I solve puzzles and problems according to instructions	**.598****	.017	.264
I play games that have spoken or written dialogue	.362	-.022	.254
It is important for me to understand the dialogue	**.576****	-.243	-.097
I construct dialogue with dialogue options	**.637****	-.299	-.109
I read guides or walkthroughs in English on the internet	**.523****	.048	.300
Overall, I need to understand the English content in a game to be able to play it	.014	-.154	-.051

r1 = Correlation between activities and habits and the amount of gaming
r2 = Correlation between activities and habits and English grades
r3 = Correlation between activities and habits and vocabulary test score
** = Statistically significant at .01 level
* = Statistically significant at .05 level

The table shows that compared to more casual gamers, frequent gamers choose to play more games that feature some form of plot and narrative elements, as well as dialogue, and that it is important for them that they understand these aspects of the game. Frequent gamers are also more likely to play games that involve puzzle solving or other activities that require them to follow instructions, and perhaps as a result they spend more time reading guides or walkthroughs on the internet. None of these activities or habits, however, showed any significant correlation with English grades or test results, save for the chance of being able to deduce unknown words from their contexts, which correlated with English grades. Together with the fact that the more eager gamers did not estimate encountering unknown words during gaming more often might suggest that these particular gamers do not play other games than those they are already very familiar with, limiting their exposure to new vocabulary, which in turn could be reflected in the results in this particular study. It is also worth noting that most hardcore gamers estimated that the games they played required them to be able to understand the in-game English content only "sometimes" or "quite often" (the possible answers including " often", "quite often", "sometimes" and "rarely or never"). Even if there are

several elements in a game that provide opportunities for language learning, they might be ignored by the player if the game does not force him or her to make sense of the language.

Online multiplayer games were also largely preferred by hardcore gamers – all of them reported that they play "only or mainly" online games or "quite much" at least. The majority of casual and active gamers did not play multiplayer games at all or only little. This was reflected in the students' choices in how often they produce language output either by writing messages or speaking in-game. In Table 4 below are presented each gamer group's - excluding the non-gamers - online in-game communication habits, which shows that the hardcore gamers are much more likely to engage in online communication than, for example, the casual gamers, all of whom reported using spoken means of communication rarely or never. The two different types of discourse in this study included chatting, which might consist of everyday conversations in-game, and a more goal-oriented type of discourse consisting of problem solving and strategizing.

Table 4. Medium and motivation for online in-game communication of each gamer group

| | | Gamer group | | | | | |
| | | Casual gamer | | Active gamer | | Hardcore gamer | |
		N	N %	N	N %	N	N %
Chatting via written communication	Rarely or never	13	76%	4	67%	0	0%
	Sometimes	1	6%	2	33%	0	0%
	Quite often	3	18%	0	0%	3	43%
	Often	0	0%	0	0%	4	57%
Chatting by speaking	Rarely or never	17	100%	5	83%	0	0%
	Sometimes	0	0%	1	17%	2	29%
	Quite often	0	0%	0	0%	2	29%
	Often	0	0%	0	0%	3	43%
Solving problems or discussing strategies via written communication	Rarely or never	15	88%	3	50%	1	14%
	Sometimes	1	6%	3	50%	1	14%
	Quite often	1	6%	0	0%	2	29%
	Often	0	0%	0	0%	3	43%
Solving problems or discussing strategies by speaking	Rarely or never	17	100%	4	67%	0	0%
	Sometimes	0	0%	2	33%	2	29%
	Quite often	0	0%	0	0%	2	29%
	Often	0	0%	0	0%	3	43%

Overall, despite the fact that the frequent gamers in this study seemed to engage in a variety of gameplay activities that are likely to create several kinds of opportunities for gaining language input or chances for producing language output more frequently than the more casual gamers, they do not seem to have benefited from this in a way that would have shown in either an increased level of average English grades or vocabulary test results compared to the non- and casual gamers. It is

certainly impossible to make any claims about the causal effects, even if the connections seem strong. For example, it would be absurd to suggest that just because frequent gamers communicate in English with other players more often this would somehow have affected their English skills negatively.

These results, therefore, should not be interpreted in a way that implies that playing video games would somehow lead to lower English skills. It is more likely that the non-gamers and casual gamers (mostly girls) simply possessed a higher level of English which the more frequent gamers (mostly boys) had not yet achieved. But there were exceptions, too: the student who recognised most synonyms in the test was, in fact, an active gamer and a girl with an excellent English grade nevertheless. There are several other factors besides gaming, such as other Extramural English activities that can influence one's English skills, some of which will be discussed below, but the main point drawn from this discussion is, rather unsurprisingly, that playing digital games, which involves being frequently exposed to English input and actively communicating with other players in English does not alone guarantee success in learning English as a foreign language.

4.3 Other Extramural English activities and their connection to the amount of gaming, English grades and test scores

Besides items related to gaming, the students were asked to report how often they read texts, listened to music, browsed the internet, read and wrote messages on internet forums and watched television in English. This was, of course, a very broad categorization of different activities, grouping together several sub categories (e.g. different text types) and excluding numerous others. For example, in order to get a comprehensive view on English activities on the internet one would have to include items such as watching Youtube, using social media and chatting with people.

Nevertheless, this categorization revealed, as can be seen in Table 5, that reading English texts, whichever text type or genre they be, showed a significant negative correlation between the time spent on gaming, while also correlating positively with English grades (significantly) and test results (non-significantly). Frequent reading, which can be considered quite beneficial for language acquisition, might then be one factor explaining the higher grades and test results of non- and casual gamers.

Table 5. Spearmann's rank correlation coefficients between Extramural English activites, the amount of gaming, English grades and test scores

EE activity	r1	r2	r3
Reading (e.g. books, newspapers, magazines)	**-.480****	**.451****	.246
Listening to music	-.081	.143	.102
Browsing English sites on the internet	-.105	.194	.269
Reading and writing messages on forums	.008	-.085	-.013
Watching TV shows	**-.372***	-.048	-.290
Watching TV shows with English subtitles or without subtitles	-.260	-.031	.144

r1 = Correlation between activities and habits and frequent gaming
r2 = Correlation between activities and habits and English grades
r3 = Correlation between activities and habits and vocabulary test score
** = Statistically significant at .01 level
* = Statistically significant at .05 level

4.4 Students' opinions on how digital gaming has affected their English skills

Opinions on the effect of gaming on one's English skills seem to be in line with results from previous studies. Most of the casual gamers thought they had benefited from gaming only somewhat while most hardcore gamers found that their English had been improved by quite much or much. The answers were more varied among active gamers. Uuskoski (2011: 33) also notes how the perceived positive effect seems to be stronger the more one spends time gaming, but what is different from his results here is that all save for one student found that playing digital games had improved their English skills at least somewhat. The students' opinions are summarised in Table 6 below.

Table 6. Gamer groups and their opinion on how gaming has affected their English skills

		Gamer groups					
		Casual gamer		Active gamer		Hardcore gamer	
		N	N %	N	N %	N	N %
In your opinion, has playing digital games improved your English skills? If so, what areas?	No	0	0%	1	17%	0	0%
	Yes, somewhat	15	88%	2	33%	1	14%
	Yes, quite much	2	12%	1	17%	3	43%
	Yes, much	0	0%	2	33%	3	43%
Vocabulary		17	100%	4	80%	5	71%
Listening comprehension		6	35%	4	80%	5	71%
Reading comprehension		9	53%	4	80%	5	71%
Writing skills		4	24%	2	40%	3	43%
Speaking		1	6%	4	80%	7	100%
Grammar		1	6%	2	40%	1	14%
Cultural knowledge		4	24%	2	40%	3	43%

Vocabulary was once again the area that was mentioned most often by participants who thought their English had been improved by gaming. Listening and reading comprehension were also mentioned by over half of the participants, by 51.7% and 62.1% respectively. While not many of the casual gamers mentioned that their oral skills would have been improved by playing games, all hardcore gamers did. It is no wonder that these particular frequent gamers would feel this way, given how much more they interact via spoken language in online games compared to the other groups. Had this study involved some measuring of the students' oral skills, it might be that these participants would have shown higher levels in this area of language compared to the others.

5 Conclusion

One purpose of the present study was to examine whether a connection between the amount of time spent on playing digital games and English proficiency could be found among Finnish upper comprehensive school students. The two variables that represented the students' English proficiency were the results from a small vocabulary recognition test and the average grade from the students' three previous English courses. Both of them correlated negatively with the amount of time the students spent on gaming, but these correlations were not statistically significant. Although gamers who spent significantly more time on gaming seemed to engage in a variety of in-game activities involving active language use much more often than the more casual gamers, they did not reach the same vocabulary test results or course grades.

Of all the other extramural English activities only reading seemed to be significantly more preferred by non-gamers and casual gamers than active and hardcore gamers while also showing a positive correlation with English grades and test results, which might be one possible explanation for the better performance of these gamer groups. Uneven gender distribution among the gamer groups was also an important factor to consider, as it is possible that girls' general school performance reflected significantly in the higher grades of non-gamers and casual gamers.

The present study confirms what both Uuskoski (2011) and Sylvén and Sundqvist (2012a) stress in their articles about the non-generalizability of their results, which indicated that a positive correlation between time spent on gaming and English proficiency did indeed exist among their respective samples of Finnish upper secondary school students and Swedish fifth-graders. The limitations and small scale of this study are apparent, but the results are clear enough to demonstrate that playing video games alone is not necessarily always connected to higher English proficiency. More research is needed to confirm the results of the previous studies, with larger samples of informants and from different school grades in order to see how the participants' age and school background affects the results. The method for measuring the participants' English proficiency should be carefully considered as well. If a non-standardized test is used, like in the present study, the level of challenge should result in enough variation in the test results. Using the students' school grades is a relatively simple, but not necessarily the most accurate method, of course.

To conclude, the increasing amount of technology embedded in our daily lives and the continuing popularity of digital pastimes combined with the possibilities of online interaction are constantly offering new ideas and opportunities for language learning. Research within CALL and especially in the context of digital games, one of the most popular hobbies among contemporary young people, should therefore definitely be pursued further in order to fully understand the phenomena associated with it, for there is new knowledge and applications to be found for the learning and teaching of foreign languages.

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Appendix A: The vocabulary test

Yhdistä lähimmät synonyymit toisiinsa numerolla. Sanoja on enemmän kuin pareja.

A.

1 permit
2 sacrifice
3 fragment
4 refuge
5 objection
6 conversion
7 powder
8 counsel
9 rifle
10 flavor
11 contest
12 discrimination

—— weapon
—— piece
—— taste
—— change
—— advice
—— gift
—— match
—— disagreement

B.

1 fatal
2 explicit
3 voluntary
4 elaborate
5 isolated
6 excessive
7 frequent
8 pleased
9 temporary
10 adequate
11 gentle
12 concrete

—— non-permanent
—— happy
—— too much
—— deadly
—— enough
—— of free will
—— solid
—— alone

C.

1 seldom
2 deliberately
3 solely
4 severely
5 substantially
6 formerly
7 furthermore
8 publicly
9 abroad
10 nonetheless
11 briefly
12 across

—— earlier
—— over
—— also
—— critically
—— anyway
—— in short
—— on purpose
—— not often

D.

1 harvest
2 retreat
3 regain
4 provoke
5 remark
6 drown
7 compose
8 echo
9 float
10 fund
11 defeat
12 delay

—— collect
—— die
—— slow down
—— create
—— escape
—— beat
—— mention
—— repeat

Appendix B: The questionnaire

KYSELY Huom: kyselyssä käytetty termi "peli" viittaa aina tietokoneella, konsoleilla, kännyköillä, tableteilla yms. pelattaviin **digitaalisiin peleihin**, ei esimerkiksi lautapeleihin.

1. Arvioi, kuinka paljon harrastat digitaalisten pelien pelaamista viikossa yhteensä.

- ☐ en yhtään (Siirry kysymykseen 13.)
- ☐ 0-1 tuntia
- ☐ 1-5 tuntia
- ☐ 5-10 tuntia
- ☐ 10-15 tuntia
- ☐ 15-20 tuntia
- ☐ yli 20 tuntia

2. Minkälaisia pelejä pelaat eniten? Valitse enintään kolme.

- ☐ Selainpelejä ym. pikkupelejä (Angry Birds, Clash of Clans, Kännykkä-/Tablettipelit yms.)
- ☐ Massiivimoninpelejä (World of Warcraft, RuneScape, Guild Wars yms.)
- ☐ Taisteluareenamoninpelejä (Dota, League of Legends, Heroes of Newerth yms.)
- ☐ Roolipelejä (Dragon Age, Skyrim, Final Fantasy yms.)
- ☐ Strategiapelejä (Total War, Civilization, Crusader Kings yms.)
- ☐ Urheilu- ja autopelejä (NHL, FIFA, Gran Turismo yms.)
- ☐ Räiskintäpelejä (Call of Duty, Counter Strike yms.)
- ☐ Toimintapelit (Tomb Raider, Uncharted, Assassin's Creed yms.)
- ☐ Tasohyppelypelejä (Mario, Donkey Kong yms.)
- ☐ Simulaatiopelejä (Simcity, The Sims, Anno, Tropico yms.)
- ☐ Musiikkipelejä (Guitar Hero, Karaoke-pelit yms.)
- ☐ En osaa sanoa. Kerro pelien nimiä:

    _____

3. Kuinka suuri osa pelaamistasi peleistä on englanninkielisiä?

- ☐ Lähes kaikki englanninkielisiä
- ☐ Suurin osa englanninkielisiä
- ☐ Osa englanninkielisiä
- ☐ Pieneksi osaksi tai ei lainkaan englanninkielisiä

4. Milloin aloitit pelien pelaamisen?

- ☐ Alle 7-vuotiaana
- ☐ 7-12 -vuotiaana
- ☐ 12-15 -vuotiaana
- ☐ Myöhemmin kuin 15-vuotiaana
- ☐ En osaa sanoa

5. Merkitse kokemuksesi perusteella ruudukkoon.

	Kyllä, usein	Kyllä, melko usein	Kyllä, joskus	Harvemmin tai ei koskaan
Pelaan pelejä, jotka sisältävät juonen ja tarinankerrontaa				
Minulle on tärkeää, että ymmärrän pelin juonenkulkua				
Huomaan pelatessani kohtaavani minulle uusia englanninkielisiä sanoja				
Käytän sanakirjaa apuna pelatessani				
Pystyn päättelemään uusien sanojen merkityksen niiden asiayhteydestä esimerkiksi kuvien avulla				
Suoritan tehtäviä ("questeja" yms.) pelin antamien ohjeiden mukaan				
Ratkaisen ongelmia tai puzzleja pelin antamien ohjeiden mukan				
Pelaamani pelit sisältävät puhuttua tai kirjoitettua dialogia				
Minulle on tärkeää, että ymmärrän hahmojen käymää dialogia				
Rakennan dialogia pelihahmojen kanssa pelin antamien dialogivaihtoehtojen avulla				
Luen internetin pelioppaita tai läpipeluuohjeita **englanniksi**				
Minun on ymmärrettävä suurin osa pelin englanninkielistä sisällöstä, jotta ylipäätään pystyn pelaamaan peliä				

6. Kuinka paljon peliajastasi käytät **moninpelien pelaamiseen netissä**?

☐ Pelaan ainoastaan tai enimmäkseen nettimoninpelejä

☐ Pelaan melko paljon

☐ Pelaan jonkin verran

☐ En pelaa nettimoninpelejä (Siirry kysymykseen 8.)

7. Kuinka usein kommunikoit nettimoninpeleissä muiden pelaajien kanssa **englanniksi** ja miten?

	Kyllä, usein	Kyllä, melko usein	Kyllä, joskus	Harvemmin tai en ollenkaan
Chattailen muiden pelaajien kanssa **viestejä kirjoittaen**				
Chattailen muiden pelaajien kanssa **puhuen**				
Ratkon ongelmia tai keskustelen esimerkiksi strategioista **viestejä kirjoittaen**				
Ratkon ongelmia tai keskustelen esimerkiksi strategioista **puhuen**				

8. Kuulutko johonkin internetin pelaajaryhmään (klaaniin, kiltaan tai muuhun vastaavaan) jonka jäsenet käyttävät pääasiassa englantia kommunikointiin?

☐ Kyllä

☐ En (siirry kysymykseen 10.)

9. Kuinka usein osallistut edellämainitun ryhmän toimintaan esimerkiksi foorumeilla tai pelien sisällä?

☐ Päivittäin

☐ Kerran tai muutaman kerran viikossa

☐ Kerran tai muutaman kerran kuukaudessa

☐ Harvemmin kuin kerran kuukaudessa tai en ollenkaan

10. Tuleeko mieleesi jotain muuta tilannetta, jossa pelatessasi käytät tai kohtaat englantia? Kerro **lyhyesti**!

_____

_____

_____

11. Koetko, että videopelien pelaaminen on kehittänyt englannin taitojasi?

☐ Kyllä, paljon

☐ Kyllä, melko paljon

☐ Kyllä, jonkin verran

☐ En (Siirry kysymykseen 13.)

12. Mitä seuraavista englannin kielitaitosi osa-alueista digitaalisten pelien pelaaminen on mielestäsi kehittänyt? Valitse niin monta kuin haluat.

☐ Sanasto

☐ Kuullunymmärtäminen

☐ Luetunymmärtäminen

☐ Kirjoittaminen

☐ Puhuminen

☐ Kielioppi

☐ Kulttuurintuntemus

☐ En osaa sanoa

13. Oletko asunut jossain englanninkielisessä maassa yli kuukauden?

        ☐ En ole

        ☐ Olen noin _____ kuukauden ajan.

14. Mitä muuta harrastat **englannin kielellä**? Merkitse ruutuun.

	Päivittäin tai lähes päivittäin	Kerran tai muutaman kerran viikossa	Kerran tai muutaman kerran kuukaudessa	Harvemmin kuin kerran kuukaudessa tai ei ollenkaan
Lukemista (englanninkieliset kirjat, sanomalehdet, aikakauslehdet yms.)				
Englanninkielisen musiikin kuuntelua				
Englanninkielisten internetsivustojen selailua				
Englanninkielisillä foorumeilla/kuvalaudoilla viestittelyä				
Englanninkielisten TV-ohjelmien tai elokuvien katselua				
Englanninkielisten TV-ohjelmien tai elokuvien katselua **englanninkielisillä tekstityksillä tai ilman tekstitystä**				

Jotain muuta? Mitä ja miten usein?

1)				
2)				
3)				

15. Mitkä ovat kolme viimeisintä arvosanaasi englannin kursseilta? Anna niin monta kuin muistat.

Numeroni kolmelta viime kursseilta: ____, ____ ja ____

16. TAUSTATIEDOT

Sukupuoli: ☐ Mies   ☐ Nainen

Ikä: _____

Tee kyselyn jälkeen vielä pikkusanatesti

Tieteen nimessä, suurkiitos vastauksistasi!