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Gaming in Second Language Acquisition

A literature review and discussion on gaming as a resource in the English classroom

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i

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Abstract

This thesis has looked at research relating to the effects of gaming on English language acquisition and discuss the findings in context of the Norwegian lower secondary school. Relevant research in the field was identified by using relevant search strings, recommendations from my supervisor, and by looking at the references from the research I discovered via search strings. The research reviewed includes topics like oral proficiency, vocabulary, reading, and general competence. It has been demonstrated that all these aspects of language proficiency may benefit from gaming given that enough time is spent gaming. The positive effects of gaming on language competence were explained with reference to factors such as input, output, interaction, and motivation. The research presented in this thesis was connected to Norwegian secondary school by discussing its implications in context of the national curriculum, LK20. The thesis explores challenges individual teachers face when trying to bring gaming into the classroom. The idea of using the pupils' interest for and experiences with gaming in the classroom is also discussed.

v

Table of Contents

List of Tables

List of Figures

1 Introduction

1.1 Background and research questions

In recent years online gaming has become increasingly mainstream, with games titles such as *Fortnite, League of Legends, FIFA*, and more, having millions of players. Such games also attract large audiences with broadcasts. The 2018 *League of Legends World Championship Finals* between Fnatic and Invictus Gaming reportedly had 99,6 million unique viewers during the entire broadcast, peaking at 44 million concurrent viewers (Wikipedia, 2020).

What is often called video gaming, online gaming or just simply gaming is how a lot of young people spend their time outside of school. Research seems to agree that boys play more video games than girls do (Brevik, 2016 & 2019, Bakken, 2020, Muñoz, 2020, Sletten, Strandbu & Gilje, 2015, Sundqvist 2009, Sundqvist & Sylvén, 2014). A majority of Norwegian boys in lower secondary school are spending at least one hour a day playing digital games. 84% said to do so in 2019. For girls in the same age bracket the percentage is 38% in 2019 (Bakken, 2020, p. 25). The difference between boys and girls in upper secondary school seems to be about the same, as 71% of boys, and 30% of girls spent at least one hour playing video games in 2019 (Bakken, 2020, p. 25). Numbers like these tell us a great deal of how Norwegian pupils spend their spare time.

In addition to spending a lot of time playing digital games, 7/10 Norwegian kids and youth aged between 9-18 years agree with the statement "Gaming makes me better at English" (Medietilsynet, 2020, p. 8). Research seems to agree with this. As we will see in chapter 3, frequent gamers have in several studies been shown to have advantages over moderate gamers and non-gamers on several arenas, such as oral proficiency, vocabulary, and grades (E.g., Sundqvist, 2009, Sundqvist & Wikström, 2015, Sletten et. al., 2015). As will be show below, this has resulted in a general difference in English language competence between boys and girls.

This thesis presents research on the effects of gaming on language acquisition in Scandinavia. The thesis then discusses to what extent the findings should have consequences for English teaching in Norway. In answering the latter question, it is necessary to take into account the regulations of the National Curriculum. The following research questions will be addressed:

What does research say about extramural gaming and L2 English learning for teenagers?

How can research about gaming and L2 English learning for teenagers be used in the Norwegian lower secondary school classroom?

1.2 Structure

After the introduction, the thesis will present literature relevant for the field of L2 English language acquisition and gaming. Chapter 2 will look at the (1) search strategies used to find research on the subject, as some central choices in terminology, (2) research related to motivation in language acquisition, and (3) input, output and interaction in language acquisition.

The research and findings on gaming and language acquisition will be presented in chapter 3. They will be presented in several categories, such as the effect of gaming on oral proficiency, vocabulary, and general competence.

When the theoretical framework is clear, the thesis will shift its focus onto the second research question in chapter 4. This research question will be approached by looking at official Norwegian national curriculum and frameworks for school. This will be presented with the intent to discuss the possibilities and opportunities that the previously presented research gives the Norwegian teachers and pupils in the lower secondary school classroom. This part of the thesis will specifically be looking at the national curricula in English, and the Core curriculum. After the curricula and frameworks have been presented, a discussion on challenges with bringing gaming into the classroom, and a discussion on using gaming experiences in the classroom, will take place. When presenting the curricula and frameworks there will be continuous discussions on the possibilities for using gaming in school.

2 Methodology and theory

This chapter will start with a description of how the research for the gaming and language acquisition-part of the thesis was explored. This will be done by describing my search methods, as well as describing how I found other research on the topic, outside of databases and search results. The chapter will also present theory on motivation in language acquisition. At the end of the chapter, some central terminology used in the thesis will be presented and discussed.

2.1 Search strategies and definitions

Before I started searching for literature on my own, I started off with research I was already familiar with from earlier in my education. My starting point in the research was Lisbeth Brevik (2019), as it was my first encounter with gaming and second language acquisition (SLA), and Pia Sundqvist (2009).

Previously having read these two studies helped me narrow down a field of research that I wanted to look closer at for this thesis. The more I searched and read, the more specific I could make my searches. I initially tested out the search string "ESL AND Gaming", which resulted in almost 2000 hits in the uit.oria-database. The process of narrowing down the research was first done by adding more keywords and Boolean operators (AND, OR). The first addition made to the search was "OR video games OR digital games OR computer games" to the existing "gaming". This was meant to ensure that I would not get any vague secondary meaning of gaming (e.g., gambling, or analogue games). Adding this to the search also made sure that I did not potentially miss out on research in the field due to semantics (e.g., a study that would only use the term 'video games' or 'computer games'). I then added the terms "norw* OR scandinav*" to the search, as they would ensure I was getting research related to either Norway, or other Scandinavian countries. I also tried out searches for Sweden and Denmark, with different variations, as to not miss out on anything. The "*" addition means that any following letters would be included, making sure that my search hit both "Scandinavia" and "Scandinavian(s)".

The more focused searches resulted in anything from single-digit results, to around fifty results. This was achieved by adding more keywords that would likely be included in the kind of research I was looking for. This included keywords such as "Extramural English" and "Language Learning OR Language Acquisition".

In 2009 Pia Sundqvist coined the term 'extramural English' (EE). The term was explained as the contact the English learner has with the language outside of the walls of the classroom. (Sundqvist, 2009, p. 1). This term includes gaming and is therefore central to several of the studies discussed in chapter 3.

The term 'language acquisition', rather than 'language learning', will be used in this thesis. A distinction is normally made between language 'learning' and language 'acquisition'. The former refers to the formal, explicit, and conscious learning, which is a process that happens in the language classroom. The latter refers to the informal, implicit, and less conscious learning which takes place outside the classroom. The term 'language acquisition' will be used consistently in this thesis. Both terms are used interchangeably in research, but not using 'learning' and rather 'acquisition' takes the highlight away from the structured form of learning one would associate with the former. This shifts the focus onto the less formal way of learning, where the language being learned here happens outside of the classroom, in a less structured way, in front of the pupils' computer screens. When going by this distinction there is also probably not possible to distinguish clearly between these two terms in practice when discussing both the classroom and extramural English. Both language learning and language acquisition can occur on both arenas.

In this thesis the term 'digital games' will be used to describe all forms of digital games, whilst the term 'gaming' will be used to describe the activity of playing digital games. The terms include both games on the computer and other digital consoles, such as the Xbox or PlayStation series. However, when discussing relevant literature, the terms the authors have used in those studies will be used instead (e.g., Sundqvist (2009) refers to video games, therefore the chapters discussing this text will use the term "video games", for the sake of consistency).

2.2 Motivation in language acquisition

Motivation is an important part of any learning, and it is a prerequisite for optimal learning and development in school (Skaalvik & Skaalvik, 2015, p. 9). It is a term which has importance in understanding learning for everyone, and it is especially important that it is present when learning a second language (L2) (Dörnyei, 2001). With this in mind, the teachers have a clear responsibility to motivate the pupils for the schoolwork. The factor of motivation becomes more apparent the older the pupils get, as pedagogical research shows

that as the pupils' age increases, their motivation for schoolwork decreases (Skaalvik & Skaalvik, 2011, Wigfield & Cambria 2010, Wigfield & Wagner 2005, Madrid 2002).

There are also studies of the impact of motivation on language acquisition specifically. A number of studies provide statistical evidence suggesting that motivation is a good predictor of language-learning success (e.g. Masgoret & Gardner, 2003; Dörnyei & Ushioda, 2009; Ushioda & Dörnyei, 2012). According to Skehan (1989), motivation is the second strongest predictor of language-learning success (after language aptitude). However, definitions of motivation differ somewhat and should therefore be discussed.

Dörnyei (2001, p. 1) explains motivation as an umbrella term we use to explain why people behave and think the way that they do. We use this term in normal everyday speech, and it is a simple term used to explain complex issues. 'Motivation' is for instance used to explain the behaviour of a pupil that spends his or her entire spare time studying for a test he or she has in a week. The pupil is motivated to do well on the test, maybe school in general. A single mother working two jobs to be able to afford rent and feed her children could be described to be motivated to do just that. Dörnyei (2001, p. 5) elaborates on this by saying that the term motivation is a general way of referring to the many different and complex origins and causes of actions. A pupils' motivation, or lack of motivation, for learning an L2 is more than just some force from within. It is the result of many individual underlying causes. These causes can vary from something small and relatively easily changeable, like a lack of sleep the night before, or something much bigger, like the general attitudes the pupil has towards the language in question. Dörnyei (2000, p. 521) points out that "motivation does not remain constant but it is associated with a dynamically changing and evolving mental process, characterised by constant (re)appraisal and balancing of the various internal and external influences that the individual is exposed to". The pupil that lacked sleep the night before could therefore have his or her motivation for language acquisition changed from one day to another. The lack of sleep mean that the pupil's energy is not the same as it normally is, and his or her motivation might be low, whereas it normally is high. The pupil's lack of sleep is not something a teacher can do much about, besides maybe making the parents aware of what has happened. The teacher can, however, affect other factors that can lead to higher motivation for the pupil. This could for instance be the material used in class, the tasks given, or the strategies and tools used to teach the course material.

Daniel Madrid (2002) did research on 319 Spanish pupils enrolled in primary, secondary, and upper-secondary schools. He did so by looking at 18 different motivational strategies and having the pupils themselves answer questionnaires rating how often they felt motivated by these strategies. Among the top four motivational strategies, we find the following: (1) audiovisual and technological aids, (3) satisfying the students' needs and interests, and (4) encouraging student participation (Madrid, 2002, p. 406). These three strategies seem especially relevant to using gaming and gaming experiences in English teaching. Satisfying the students' needs and interests, and encouraging student participation will be discussed in chapter 4.

Audiovisual and technological aids was described as "When the teacher uses *audiovisuals and new technologies* (illustrations, photographs, recordings, computers, Internet, etc.) and not only the textbook" (Madrid, 2002, p. 399). This strategy is the one where digital games would fit directly into, as it is both an audiovisual tool, as well as a new technology. What Madrid found to be the case was that audiovisual aids and new technologies was the motivational tool that the pupils themselves felt the most motivated by. As many as 185 pupils said that they always felt motivated by audiovisual aids and new technologies. 67 answered that they often felt motivated by it, 49 answered "sometimes", 14 said "rarely", with only 4 pupils answering that they never felt motivated by it (Madrid, 2002, p. 402). The teachers agreed with the pupils' on audiovisual aids and new technologies being a strong motivator, with a mean score of 4.44, where 5 was "always" and 1 was "never". The pupils' mean grade for the same category was 4.30 (Madrid, 2002, p. 406). This means that their assessment of the value of audiovisual aids and new technologies as a motivational strategy is similar. The pupils and teachers are in strong agreement that it is the strongest motivational factor. In fact, audiovisual aids and new technologies is the only motivational factor that had a mean score above 4 for the pupils. Both "Working in pars or groups" and "Satisfying needs and interests" had mean grades of 3.93 and 3.92 respectively (Madrid, 2002, p. 406).

Gardner (1985) distinguishes between 'intrinsic' and 'extrinsic' motivation. These two differ by where the motivation for the behaviour comes from. Intrinsic motivation is when the goal of the behaviour is to is to bring an internal joy, satisfaction, feeling of competence, self-determination or similar. The activity itself, and the pupils' mastery of it is motivating by itself (Skaalvik & Skaalvik, 2015, pp. 66-67). The intrinsic motivation therefore comes from within and is very personal. It may for that reason be very different depending on the pupil in

question. A pupil finding joy in playing a digital game can therefore feel intrinsic motivation for playing digital games.

Extrinsic motivation is when the goal of the behaviour comes from the outside, and not from within oneself. It can often be linked to being rewarded for something, in both material and nonmaterial ways (Skaalvik & Skaalvik, 2015, p. 67). This type of motivation could for instance be when pupils receive praise for their work, or a pupil being rewarded with a chocolate bar for doing his or her homework. A pupil can even feel like using gaming in class can be a reward, thus feeling motivated by the reward itself, or motivated to work before being rewarded. Extrinsic motivation can also be on a larger scale, like learning a new language with the intent of landing a high-paying job.

Gardner and Lambert (1972) introduce the concepts of 'instrumental' vs 'integrative' motivation. Instrumental motivation is when the motivation for learning another language lies in the rewards that it brings. This could for instance being learning a new language with the intention of using that skill to get a new job. Integrative motivation is the motivation that comes to life when the desire is to take part in the community of the language being learned. Peter MacIntyre comments on this type of motivation by saying the following: "The major motivation to learn another language is to develop a communicative relationship with people from another cultural group." (MacIntyre, 2007, p. 566). An example of this type of motivation could be someone involved in any gaming community, for instance the *Call of Duty*-community. They might find learning English motivating as the game series is successful on the global scale. This means that people all around the world play with and talk to each other about it all over the internet. This is what James Paul Gee calls an 'affinity group':

> *I call the group of people associated with a given semiotic domain [...] an affinity group. People in an affinity group can recognize others as more or less "insiders" to the group. They may not see many people in the group face-to-face, but when they interact with someone on the Internet or read something about the domain, they can recognize certain ways of thinking, acting, interacting, valuing, and believing as more or less typical of people who are "into" the semiotic domain. (Gee, 2003, p. 27)*

Participating in an affinity group could be the major goal of learning a language. The forum-like social media website *Reddit*, offers the ability to create 'subreddits', which is a subdivision of the "reddit.com" URL. This feature lets you create and participate in a community dedicated to a specific topic. The digital game "League of Legends", for instance, has around 5.2 million users subscribed to the '/r/leagueoflegends'-subreddit, and the topic of gaming (/r/gaming) as a whole has around 29.8 million subscribed users (/r/ is used to separate the "www.reddit.com"-URL and the subreddit name). This number only considers people who have created accounts on the website, meaning that the number of people who interact on the forum is not accurately represented. Some accounts might be inactive, while other people might not have an account at all. You only need an account to create and rate posts and comments. It also does not take into account whether the user is active or not. However, this means that since the creation of the reddit-forum dedicated to *League of Legends*, at least around 5.2 million individual users have interacted with it at least once. As of writing this, there are 26k active users online on the *League of Legends*-subreddit. This is just one of many different forums where people with a shared interest in gaming can come together and take part in a community, discussing their shared interest in the game.

2.3 Input, output and interaction in language acquisition

There is universal agreement that input of language is a prerequisite for SLA to take place. However, it is also clear that not all input leads to 'intake'. Intake is "that part of the input that the learner notices" (Schmidt, 1990, p. 139). There may be many reasons why input does not become intake. Krashen's 'Comprehensible Input Hypothesis' (Krashen, 1982), argues that input can only become intake if it is comprehensible to the learner. Krashen claimed that if enough of the input was understood, language acquisition would occur automatically. He defined comprehensible input was as input at an "I + 1" level, meaning that the input was one level up from the learner's current level.

One serious problem with Krashen's hypothesis is that it does not allow any role for 'output', i.e., the learner's own language production. According to Swain (1985, 1995), output is crucial. Swain (1985) observed that children with English as a first language (L1). When they were learning French in immersion programs in Canada, they did not learn French properly despite having been exposed to massive French input for seven years. According to Swain, what was missing in their language program were opportunities where they had to produce 'comprehensible output'. Having to produce L2 output forces the learner to attend to "pay

attention to the means of expression needed in order to successfully convey his or her own intended meaning" (Swain 1985, p. 249). The learner may then discover gaps in his or her L2 knowledge, which is necessary to learn the relevant feature or vocabulary. The hypothesis that such output is crucial to second language acquisition is referred to as the 'Comprehensible Output Hypothesis'.

It has further been argued that interaction is crucial in SLA. According to Long's 'Interaction Hypothesis' (1983, 1996), modifications that take place when speakers interact make input comprehensible. Since comprehensible input promotes acquisition, it follows that interaction may promote acquisition. Complete breakdowns in communication are said to be particularly effective because when they occur, a serious effort is required to modify the input. Long uses the term 'negotiation for meaning' to refer to situations in which interlocutors make adjustments in their speech until understanding is reached (1996, p. 414). During negotiation for meaning, the learner may receive 'negative feedback', which is the communication partner commenting on the learner's incorrect utterance. According to Long, negative feedback obtained during negotiation for meaning helps draw attention to aspects of the language that the learner has not yet acquired and "may be facilitative of L2 development, at least for vocabulary, morphology, and language-specific syntax, and essential for learning specifiable L1–L2 contrasts" (1996, p.414). Several studies support the claim that interaction may lead to language acquisition, and there is also evidence that interactions which do not involve native speakers may have the same language acquisition effect (cf. e.g., the discussion in Gass, Behney & Plonsky, 2013, pp. 79–80). The communication partners in interaction situations may thus provide 'scaffolding' to each other, helping each other to advance to a higher linguistic or communicative level (Vygotsky, 1978).

Gaming is, of course, potentially a good learning activity as it provides numerous opportunities for input, output, and interaction (negotiation of meaning, scaffolding). Online gaming, especially, gives the opportunity for interaction with other people all around the world. There is an opportunity for comprehensible input when playing single-player games, or story-based games, where the players interact with in-game text or voice lines. There is room for the players to produce their own comprehensible output, such as via in-game text- or voice chats. Online gaming, especially, puts the players in environments to interact with other players. If the players do not make themselves understood, a negotiation of meaning can occur.

3 Research on the effects of gaming on language acquisition

This chapter will present research on the effects gaming has on language acquisition. The research presented will be divided into the following categories: (1) gaming and oral proficiency, (2) gaming and vocabulary, (3) gaming and reading, and (4) gaming and general competence.

3.1 Gaming and oral proficiency

In her thesis from 2009, Pia Sundqvist studies the effects extramural English has on oral proficiency and vocabulary. The participants for Sundqvist's study were 80 9th graders from four different schools in Sweden, aged between 15 and 16 years old (Sundqvist, 2009). This is the same age as Norwegian 10th graders are. 36 of the participants were boys, and the other 44 were girls, all with varied backgrounds. This was a choice made by Sundqvist with the intent of being able to generalise the results better. The pupils' extramural English activities were measured starting the first week of the 2006-2007 school year, ending on the last week (Sundqvist, 2009). The data were collected in several different ways. To get background information on the pupils, a questionnaire was used. The questionnaire was also used to measure extramural English activities, as well as the pupils' views on English (whether this refers to the language, school subject or both is unclear) (Sundqvist, 2009, pp. 88-89). Secondly, the pupils were presented with language diaries. The pupils wrote down their language activities in these diaries in eight categories. These categories were: reading books, reading newspapers/magazines, watching TV, watching films, surfing the Internet, playing video games, listening to music (Sundqvist, 2009). The eighth category was titled "other", leaving the pupils room to collect data on activities that did not fit the other seven categories. The intention of these diaries was to gather data on the pupils' extramural language activities, both in English and other languages. The 20-page long language diary was designed together with Liss Kerstin Sylvén and was to be filled out once during the autumn and again during the spring (Sundqvist, 2009, pp. 89-91).

To measure oral proficiency, Sundqvist used five different speaking tests spread out over the entire school year. A dyadic set-up and interactive tests were used. Sundqvist also interviewed eight pupils to gather qualitative data for her thesis. The chosen pupils for these interviews were one boy and one girl from each of the four participating classes. The interviews were conducted in Swedish, and the pupils were asked open-ended questions with the intention of

getting answers to their thoughts on extramural English, English in general and their strategies for learning new words (Sundqvist, 2009, p. 99).

Sundqvist looked at two types of motivational factors related to extramural English and oral proficiency: Self-efficacy, which was described as "people's judgement of their own ability to carry out a task" (Sundqvist, 2009, p. 200), and anxiety to speak. The correlation between extramural English and these two categories were only statistically significant for boys. What Sundqvist found was that there was a positive correlation between time spent on extramural English activities and the boys' self-efficacy (Sundqvist, 2009, p. 200). This can mean that the more time spent on extramural English activities, the better you can judge your own ability, and vice versa. What Sundqvist found when looking into anxiety to speak was that the extramural English activity "playing video games" had a negative correlation to it (Sundqvist, 2009, p. 200). This means that more time spent playing video games resulted in less anxiety to speak English. These findings agree with Sundqvist's examination of interviews as well as language diaries (Sundqvist, 2009, p. 200). All of this seems to contradict the (arguably outdated) notion that playing video games and other activities deemed "nerdy" are associated with timid and insecure people.

To map the pupils' extramural English, Sundqvist created five subsets where the pupils were placed based on their time spent on extramural English activities. The subsets were numbered from one to five, where the pupils in subset one reported the lowest amount of extramural English (0-8 hours), and the pupils in subset five reported the highest numbers of extramural English (44-58 hours) (Sundqvist, 2009, p. 123). Subset one, two (8-20 hours) and three (20-34 hours) contained 70/80 pupils, respectively 15, 34 and 21 pupils. The other ten pupils were spread as six in subset 4 (34-44 hours) and the last four pupils were in subset 5 (Sundqvist, 2009, p. 123). The mean time spent on extramural English in each subset, ranging from one to five, was 3.5 hrs/week, 13.1 hrs/week, 25.3 hrs/week, 40.2 hrs/week and 50 hrs/week (Sundqvist, 2009, p. 123). Sundqvist also presents the particular extramural English activities the pupil in each subset spends time on. The category of "Video games" is heavily represented in subset 4 and 5, with 11.1 hrs/week and 18.3 hrs/week, respectively. Subset 3 reports 5.1 hrs/week on video games, while subset 1 and 2 report 0.5 hrs/week and 1.8 hrs/week each (Sundqvist, 2009, p. 124). This shows that those pupils who spend more time on extramural English activities tend to spend a large portion of that time on gaming. It is also worth noting that more time spent on extramural English also seems to increase time spent listening to music (Sundqvist, 2009, p. 124). This is not a very surprising fact, as several

genres of video games either contain their own music or leaves room for the player to enjoy their own music while playing. When looking at oral proficiency, Sundqvist used data which she had gathered from five different speaking tests. When comparing the oral proficiency grades of the different subsets, Sundqvist looked at both the genders separated and combined. The numbers are presented in *Table 1*.

Table 1 – EE subsets and OP grades (from Sundqvist, 2009, p. 137).

	Sample			Boys			Girls		
EE subset	OP grade	N	Std. Dev.	OP grade	N	Std. Dev.	OP grade	N	Std. Dev.
1	2.5	13	.62	2.4	8	.58	2.7	5	.69
2	3.5	32	.88	3.4	9	.93	3.6	23	.87
3	3.5	20	.84	3.6	10	.49	3.5	10	1.12
4	3.3	5	.69	3.2	4	.77	3.5	1	-
5	3.6	4	.45	3.8	3	.41	3.2	1	-
Total	3.3	74	.88	3.2	34	.81	3.5	40	.93

The pupils that spend the most time on extramural English activities are the ones who get the highest OP grades. The same goes for the lowest time spent on EE activities and the lowest OP grades.

Sundqvist compared oral proficiency to the previously mentioned motivational factors of self-efficacy and anxiety to speak . What she then found was that an increase in oral proficiency also meant an increase in self-efficacy. Self-efficacy can therefore be said to be important for one's oral proficiency. This is something Sundqvist learns more of in an interview with a pupil, whom clearly could not properly judge his own task solving, claiming that him being bad at English means he should be doing more homework to catch up to those better than him (Sundqvist, 2009, pp. 200-201). The same correlation as between oral proficiency and self-efficacy seems to be true for oral proficiency and "anxiety related to speaking" as well. The higher the oral proficiency was, the lower the anxiety to speak seemed to be (Sundqvist, 2009,

p. 201). Data such as this can seem to suggest that motivation for English as an L2 is higher when you already have some form of mastery over it, in this case proficiency in oral English.

Sundqvist (2009) finds that pupils that spend more time interacting with English language in their spare time also tend to have higher oral proficiency than those who do not. Her correlation analysis shows that around 10% of the pupils' OP (oral proficiency) grade can be accounted for by time spent on extramural English activities. The pupils were graded on the speaking tests, which showed improvement for all four classes during the school year. By comparing these numbers with pupils' time spent on extramural English, Sundqvist claims that 9,4% of the improvement can be attributed to extramural English. When it comes to the correlation between the two, however, she uses the metaphor of the chicken or the egg, saying that which one is the cause, and which one is the effect, is hard to say (Sundqvist, 2009, p. 193). This suggests that we cannot be 100% certain of the oral proficiency being because of the gaming (and other extramural English activities), as it could be the other way around. Taking part in online gaming could happen because of their already strong oral proficiency in English, whereas someone not as skilled could be discouraged from doing so.

3.2 Gaming and vocabulary

3.2.1 Sundqvist (2009)

The connection between extramural English and vocabulary was explored by Sundqvist via two vocabulary tests. The two vocabulary tests that were used were the Vocabulary Levels Test (VLT, see Laufer & Nation, 1999; Nation, 2001) and the Productive Levels Test (PLT, see Nation, 2001). Sundqvist (2009, p. 97) describe these tests as both reliable and valid. The VLT measures the learners' receptive vocabulary, while the PLT measures the learners' productive vocabulary. The full PLT was not used by Sundqvist, but rather a shortened version, as the PLT is aimed at higher English levels. The PLT asked the pupils to finish a word that was given in the context of a sentence. For instance, the example sentence on the test was "He was riding a bi*cycle*." (Sundqvist, 2009, p. 250), where the cursive part of the word is for the pupils to fill in. The target words at the beginning of the test were easier (more frequent) than those at the end of the test (less frequent) (Sundqvist, 2009, p. 147). The VLT, on the other hand, asks the pupils to connect words and definitions in pars. 6 Words are given, with 3 definitions. An example task from the VLT is illustrated in *Table 2*.

Table 2 – An example of the VLT (adapted from Sundqvist, 2009, p. 252).

Word	Definition	
1 business		
2 clock	_____ part of a house	
3 horse	_____ animal with four legs	
4 pencil	_____ something used for writing	
5 shoe		
6 wall		

In this type of test, the pupils' ability to define words are tested in a form of multiple-choice.

The results of the PLT showed boys scoring higher than girls on the tests, though these results were not statistically significant. There were some large differences, such as the boys from one of the classes (class 1) participating in the study outperforming the girls with a score of 19.3, to the girls' 11.9 mean score, out of 45 (Sundqvist, 2009, pp. 148-149). This same class also had a huge disparity between the genders' time spent on extramural English, with the boys' mean hours/week reportedly 22.9, whereas the girls averaged 8.9 hours/week (Sundqvist, 2009, p. 120). The mean time spent for both genders across all four classes was 20.8 hours/week for the boys and 16.4 hours/week for the girl, for context. Sundqvist compared the results of the PLT with the subsets discussed in section 3.1 as well. What she found by doing so, was that there might be a straightforward relationship between extramural English and vocabulary. This thought was based on the fact that the PLT scores either increased or did not change between subsets, ranging from 1 (lowest score) to 5 (highest score). The subsets represented time spent on extramural English (cf. section 3.1). This is illustrated in *table 3*.

Table 3 - Mean scores for the EE subsets on the Productive Levels Test (adapted from Sundqvist, 2009, p. 149).

EE subset	Productive Levels Test (max 45)	N
1	10.3	15
2	17.0	34
3	17.0	21
4	18.3	6
5	21.5	4
Total	16.1	80

Results of the VLT were looked at in the same way as the PLT. When it came to comparing classes and genders on the tests, the results were the same across the board, with one exception. On the PLT, the boys of class 1 scored highest, with the boys of class 2 scoring second highest. On the VLT, this result was reversed. There was a significant difference between boys and girls, who had mean scores of 64.3 and 56.7 respectively, with a maximum score of 90 (Sundqvist, 2009, pp. 149-150). As was the case with the PLT, the EE subsets' scores correlated with time spent on extramural English. Those who reported low numbers of extramural English also scored the lowest on the PLT (48.8), while those reporting most time spent on extramural English scored highest (73.5). The other subsets were fairly close to one another, showing a slight increase in score from subset 2 (61.7) to subset 4 (63.0). Subset 3 scored about the same as subset 2, with a mean score of 61.6 (Sundqvist, 2009, p. 151).

Sundqvist (2009) concludes with a clear connection between extramural English and vocabulary. Those reporting little time spent on extramural English (such as the girls from class 1), also scored lower on the vocabulary tests. Sundqvist says that there is a significant correlation between extramural English and vocabulary among boys, while it is not noticeable among girls. She found out that the most important extramural English activities for the pupils' vocabulary were "playing video games" and "surfing the Internet" (Sundqvist, 2009, pp. 195-197).

3.2.2 Sundqvist and Wikström (2015)

Sundqvist and Wikström measured the pupils' L2 vocabulary against their gaming habits, by using the vocabulary tests from the 2009 study, as well as the essays from the Swedish national test of English 2007. Sundqvist and Wikström (2015) found that frequent gamers (≥5/hrs a week gaming) had higher rated essays than non-gamers and moderate gamers. The frequent gamers showed more advanced vocabulary in their essays. The frequent gamers also scored higher than the other two groups on both vocabulary tests. The maximum score for the PLT was as mentioned in section 3.2.1, 45, and their mean score was 22.7, where the non- and moderate gamers scored 13.7 and 14.4 respectively. On the VLT the max score was 90, and the frequent gamers had a mean score of 71.6, with the other two groups scoring 55.2 (non-gamers) and 58.4 (moderate gamers) (Sundqvist & Wikström, 2015, p. 71).

The vocabulary in the national test of English-essays were measured by polysyllabic words, with three or more syllables, using this as an indicator for advanced vocabulary. They measured the lengths of the essays, the number of unique words in the essays, the number of polysyllabic words used, the number of unique polysyllabic words used, and the pupils' own polysyllabic words (words that the pupils did not encounter in the instructions) (Sundqvist & Wikström, 2015, pp. 71-72). The word unique here means that the same word will not be counted twice.

The findings showed that the frequent gamer group on average wrote longer essays than the moderate gamers, yet shorter essays than the non-gamers. The data analysis, however, showed these numbers to be statistically insignificant. The non-gamers and the frequent gamers were indistinguishable from one another when it came to unique words, while the moderate gamers had a significantly lower score (Sundqvist & Wikström, 2015, p. 71-72).

The polysyllabic measurements had the frequent gamers scoring highest in all three categories, in numbers, in unique numbers and the pupils' "own" polysyllabic words. This was followed by the non-gamers and then the moderate gamers. The number of polysyllabic words used was not statistically significant, however the other two categories were. The frequent gamers were significantly ahead of the moderate gamers when it came to unique polysyllabic words used, but not of the non-gamers. The same result was the case with the pupils' own polysyllabic types, where the frequent gamers scored significantly higher than the moderate gamers, but not than the non-gamers (Sundqvist & Wikström, 2015, pp. 71-72). The results are displayed in *table 4*:

Table 4 - Essay vocabulary token and type counts for frequent, moderate and non-gamers (adapted from Sundqvist & Wikström, 2015, p. 71).

	Non-gamers (n = 34)	Moderate gamers (n = 25)	Frequent gamers (n = 18)	Total (N = 77)
Overall tokens, mean	363.4	298	326.7	333.6
Overall types, mean	153.3	130	155.2	146.2
Polysyllabic tokens, mean	17.2	14.1	19.7	16.8
Polysyllabic types, mean	12.2	9.5	15.4	12
Own polysyllabic types, mean	9.1	6.6	11.6	8.9

3.2.3 Sundqvist (2019)

In 2019 Pia Sundqvist published a study examining "the relation between playing commercial-off-the-shelf (COTS) games in the wild and L2 English vocabulary" (Sundqvist, 2019, p. 87) with the goal of drawing a comparison between gamers and non-gamers' vocabulary. To achieve this, she ended up with four research questions:

1. *To what extent is there a relation between the time spent playing COTS games and L2 English vocabulary test measures?*

2. *To what extent is there a relation between four type-of-game-preference groups (i.e., non-gamers, SP, MP, and MMO) and L2 English vocabulary test measures?*

3. *What does an examination of solution rates (percentage of correct answers) of individual vocabulary items in a productive levels test reveal about gamers' productive vocabulary? Is it different from non-gamers' productive vocabulary? If so, how?*

4. *What does an examination of infrequent vocabulary in essays reveal about productive vocabulary use among gamers? Is it different from non-gamers' productive use of infrequent vocabulary? If so, how? (Sundqvist, 2019, p. 90).*

There were 1085 participants, divided into two sample-groups, A and B. Sample A consisted of 1069 pupils in Swedish schools, all aged 15-16. 528 of these pupils were male, and 541 were female (Sundqvist, 2019, p. 91). Sample B consisted of 16 pupils who were all familiar with Sundqvist, as they had participated in a previous study while in middle school. These were also 15-16 years old, with 12 of them being girls, and 4 boys (Sundqvist, 2019, p. 91). Both samples were given questionnaires, and had their English grades collected. Sample A went through a productive and a receptive vocabulary test (the previously mentioned PLV and VLT), while interview data and essays were collected from sample B (Sundqvist, 2019, p. 87).

When it came to categorizing time spent gaming, Sundqvist's questionnaire had four options, no time spent gaming, less than three hours a week, between three and nine hours a week, and more than nine hours a week. This question divided time spent gaming into four groups: non-gamers, low-frequent gamers, moderate gamers, and frequent gamers, respectively (Sundqvist, 2019, p. 94). Sundqvist also categorized types of games played. The games were categorized by their scale of social interaction (The SSI model, see Sundqvist 2013), which takes basis in a sociocultural approach to second and/or foreign language acquisition. This model defines three types of games. Firstly, the single-player (SP) games, which can be played both online and offline, but as the name suggests, there is only a single player involved (Sundqvist, 2013, p. 91). Examples of such games are Nintendo games such as various *Pokémon* titles, Rockstar Games' *Grand Theft Auto*-series, or the classic Nintendo 64 game *Super Mario 64*. Pokémon games such also has the option to be played locally (old titles such as *Pokémon Red*) and online (newer titles like *Pokémon Sword*) with other people. This is what Sundqvist (2013, p. 91) defines as the multiplayer (MP) games, which are games generally played in a private game session, with a minimum of two involved players, and commonly a maximum of around thirty players. There is a limit to the amount of people involved in said game session, which is what defines the difference between the multiplayer game and the massive multiplayer online (MMO) game. Other popular multiplayer games include the *Call of Duty*-series, *Overwatch*, *League of Legends*, and *Minecraft*. An MMO (also sometimes called massively multiplayer games) is an online game where as many as hundreds or even thousands of players simultaneously interact in gameplay (Steinkuehler,

2008; Sundqvist, 2013, p. 91). These games are played online on regional or international servers, allowing large numbers of players to interact with one another at the same time (Sundqvist, 2013, p. 91). Examples of these games are *World of Warcraft*, *The Elder Scrolls Online*, and *Guild Wars 2*.

With Sundqvist's (2013) definitions of types of games in mind, the model places single player games on the "small" side of the scale, which indicates a small amount of social interaction. This then leads to a small potential for learning English. On the opposite side of the scale are the MMOs, with a large amount of social interaction and potential for learning English. Multiplayer games fit in the middle, where the social interaction is more than single player games, but less than the MMOs, and therefore so is the potential for learning English (Sundqvist, 2013). This model suggests that the potential for learning English increases based on the scale of social interaction in the games. Sundqvist (2013, p. 94) stresses that this does not mean that language acquisition does not happen single player games. Sundqvist's findings show that not gaming, followed by playing multiplayer games, were the most represented types of gaming, as shown in *Table 5*.

Table 5 - Distribution of Sample A participants according to the SSI model (from Sundqvist, 2019, p. 94).

Group	N	Percentage
Non-gamers	416	38.9
SP	77	7.2
MP	338	31.6
MMO	86	8
Unclassified	110	10.3
Missing	42	3.9
Total	1069	100

The first research question, relating time spent on COTS and the vocabulary tests was answered by comparing the median scores on both the PLT and VLT between the categorizations of gamers. As shown in *Table 6,* the Frequent Gamers ended up with the

highest scores on both tests, followed by the Moderate Gamers, while the Low-Frequent and Non-Gamers were both close and slightly behind.

Table 6 - PLT and VLT scores across groups based on gameplay per week (from Sundqvist, 2019, p. 95).

	PLT			VLT		
	M	**SD**	**N**	**M**	**SD**	**N**
Non-Gamers	16.88	9.24	404	57.25	16.85	380
Low-Frequent Gamers	16.86	9.24	155	56.46	17.72	145
Moderate Gamers	20.45	10.36	168	62.02	18.92	162
Frequent Gamers	24.42	10.72	250	70.34	17.54	238
Total	19.42	10.33	977	61.33	18.39	925

When trying to answer the question of types of games played and vocabulary, Sundqvist first had to categorise the groups of gamers into what types of games they played, Non-Gamers, SP, MP, or MMO according to the SSI model. There were also some game titles that ended up being categorised as Unclassified (Sundqvist, 2019, p. 95). These categories are as shown in *Table 7* compared to the pupils' gameplay per week.

Table 7 - Cross-Tabulation of groups (Types-of-Game-Preference Versus Gameplay per Week) (Sundqvist, 2019, p. 95).

Gameplay (Hours per Week)	Non-Gamers (0)	Low-Frequent (<3)	Moderate (3-9)	Frequent (>9)	Total
Non-Gamers (n)	416	0	0	0	416
SP (n)	0	42	26	9	77
MP (n)	4	61	102	171	338
MMO (n)	0	3	15	68	86
Unclassified (n)	3	55	33	4	110
Total (N)	423	161	176	267	1,027

There are several interesting things to note in this table, for instance, frequent gamers do not tend to play single player games, while low-frequent gamers do. In complete opposite fashion, while multiplayer games are still popular with the low-frequent gamers, they are still even more popular for frequent gamers. MMO games are almost exclusively played by frequent gamers, with 68 out of 86 MMO players being frequent gamers. This table seems to indicate that those who games the most also experience the most social interaction, as they play game types that the SSI place at the higher end of social interaction.

After having categorised type types of games preferred, Sundqvist compared the data with both vocabulary tests. The pattern shown for both the PLT and the VLT was that multiplayer and MMO games scored higher than single player games and non-gamers, though in that order (Sundqvist, 2019, pp. 96-97). What this showed is that not only is there a relation between type of game played and vocabulary, but also between time spent playing and vocabulary. This because time spent playing and type of game preference correlated with each other. After entering the variables into a multiple regression analysis with L2 Vocabulary as the outcome variable for both tests, the effect of the type of game disappeared, while the effect of time spent playing remained significant for both tests (Sundqvist, 2019, pp. 96-97). Sundqvist (2019, p. 97) further notes that type of game only appeared to predict L2

vocabulary due to its correlation with time spent gaming. Why time spent gaming and types of games preferred correlate like they do is not clear and can only further be researched.

The third research question was approached by comparing the individual words tested in the Productive Levels Test (PLT) on four different levels, K2, K3, K5, and academic, in ascending order of difficulty (Sundqvist, 2019, pp. 97-99). When comparing gamers to non-gamers, the gamers scored a higher total in all four tests (Sundqvist, 2019, pp.97-99). This suggests that the gamers have a more advanced productive vocabulary than the non-gamers. Sundqvist (2019, p. 99) also notes that the answers showed a tendency where the gamers showed around a double solution rate to the non-gamers for what seemed to be particularly difficult words. Words that are described to be particularly difficult are those with a low solution rate compared to other words on the same level of the test. The words that fall into this category are presented in *Table 8*.

Table 8 - Particularly difficult words (adapted from Sundqvist, 2019, p. 99).

Level of test	Particularly difficult words	Amount
K2	*Lack, wealth*	2/17
K3	*Acid, lawn, proclaimed, perceived, slender*	5/15
K5	*Oath, vault, ledge, cavalry, mature*	5/8
Academic	*Saturated*	1/5

Sundqvist (2019, p. 99) also notes that the higher the levels increase, the more the gamers excel at the particularly difficult words. This is illustrated in *Table 8*, which shows that the harder tests also had more particularly difficult words where the gamers scored around twice as high as the non-gamers. The K5 has five particularly difficult words, where the gamers' scores were around twice as high as the non-gamers, out of eight possible words. This is a large increase when compared to the K2, where this is only the case for two out of 17 words.

Lastly, the study wanted to compare gamers and non-gamers' productive use of infrequent vocabulary. This research question was answered with a qualitative approach, with a much smaller sample size (N=16), as well as analysis of essays, and interviews with the pupils

(Sundqvist, 2019, pp. 99-104). The essays were approached the same way as Sundqvist and Wikström (2015) previously had done, looking at the numbers of polysyllabic words, numbers of unique polysyllabic words, as well as the pupils' "own" polysyllabic words. The study also looked at pupils' numbers of words and numbers of unique words, comparing the numbers words and unique words to one another in form of a ratio, as to indicate advanced vocabulary usage. Ottilia, for instance, has a ratio of 0.44 unique words per word written, 0.01 word above the mean of the group, while Fredrik has a 0.5 ratio, 0.07 above the mean, suggesting a more advanced vocabulary. However, Sundqvist (2019, p. 101) notes that this ratio is also affected by length of the essays, and Fredrik's essay is only 257 words, whereas the mean essay is 395 words long, and the longer a text is, the more likely the ratio is to fall.

Six interviews revealed pupils that considered gaming to be a significant part of their lives. The interviews reveal different types of gamers, who choose to interact with different types of games in different ways (Sundqvist, 2019, pp. 99-103). Fredrik is someone who used to play extensively for a time, but recently realized that his gaming went too far, making him angry, choosing to cut back on gaming, and though his essay was short, his polysyllabic count was on par with or better than the mean high-scoring pupils of his age from Sundqvist and Wikströms (2015) previous study. Henrik is a serious gamer who prefers multiplayer sports games, with an excellent essay and final English grade (both A), good length on his essay and a polysyllabic count that indicates an advanced vocabulary. Jessica described her gaming habits as "on-and-off". She told about how she wrote a lot in-game when playing. She also has the possibility to speak when gaming but adds that she does not dare to do so. Naomi's gaming is described like "a habit of occasional intense gameplay" (Sundqvist, 2019, p. 102), being quoted as saying "I have to play" (Sundqvist, 2019, p. 102), adding that this mainly happens during holidays. When doing this, she prepares with various snacks, before immersing herself into *Assassin's Creed* throughout the night. Naomi's essay and productive vocabulary were average in quality, except for the length of her essay, which was above average. Sundqvist speculates that this might be thanks to her gaming (Sundqvist, 2019, p. 102). The last two pupils were Greta and Emmy, who both said it was difficult to stay away from gaming. They both played regularly, where Emmy preferred the multiplayer game League of Legends, adding that she only played with Swedish friends, whereas Greta enjoyed casual games, like a single player Kim Kardashian-game. Greta had a high polysyllabic count, around the same as Henrik, whereas Emmy had fewer, and especially trailed in uniqueness of the polysyllabic words, as well as her "own" polysyllabic words. Their essays ended up with

the same grade (B), as the essays are affected by other aspects than just vocabulary. This shows that there are many different ways that pupils can connect with gaming, even though the sample size is low. The pupils are all serious gamers, but this was in a different sense from one another. Naomi describes an almost cyclical "need" to game, whereas Greta and Emmy say they struggle with staying away from gaming. Fredrik did not like the way he ended up responding with anger to gaming, and therefore ended up cutting back on it. Jessica described her experience with an MMO, and how she did not feel comfortable speaking with the strangers she was gaming with, whereas Henrik is serious about playing multiplayer sports games.

The qualitative analysis of both the essays and the interviews added support to the findings in research questions 1-3, though this time in terms of productive vocabulary in essays, rather than vocabulary tests (Sundqvist, 2019, p. 104).

3.3 Gaming and reading

3.3.1 Brevik (2016)

When Lisbeth Brevik in cooperation with Rolf Vegar Olsen and Glenn Ole Hellekjær conducted a large-scale, nation-wide study with 10,331 participating pupils in Norwegian upper secondary school in 2016, a pattern of outliers in the relationship between reading Norwegian as their L1 and English as their L2 became evident. This study identified the poorest readers (n=2,123), scoring under the 20th quintile in their L1. 56% of these 2,123 pupils were also poor readers of their L2 (n=1,192). A more surprising finding, however, was that 22% (n=463) of those who read poorly in their L1, showed strong reading comprehension in their L2, English (Brevik, Olsen & Hellekjær, 2016, p. 171).

The findings of the outliers in Brevik et al. became basis for a further study by Brevik (2016). The noteworthy thing about the outliers were that they were mainly boys (66%), and a majority of both the boys and the girls were pupils in vocational studies, with 40% being boys in vocational studies, 18% being girls in vocational studies, leaving 26% and 16% boys and girls respectively in general studies (Brevik, 2016 p. 40).

The data used in Brevik's (2016) study was from two national reading tests from Year 11 pupils, one in English and one in Norwegian, supplemented with data from questionnaires and interviews. The aim of the study was to understand why the 16- to 17-year-old outliers read that much better in their L2 than their L1. Brevik did so by identifying their reading profiles

in both Norwegian and English . The participants of the study were five boys in vocational studies, all attending the same upper secondary school. The five boys all spoke Norwegian as their L1, with one pupil being born outside of Norway, and another one having parents born outside of Norway. The pupil born outside of Norway answered that he had previously attended an English-speaking school. They scored from 71% to 100% on the English reading test (Brevik, 2016, pp. 44-45). Brevik wanted to look closer at why these boys were better readers of their L2 than their L1 by addressing these two research questions in the study:

1. What characterises these students' use of English in and out of school?
2. To what extent do these students provide explanations as to why they are better readers in English than in Norwegian? (Brevik, 2016, p. 43).

Brevik's findings related to the first research questions were that the boys were all interested in the English subject in school to a certain extent. These answers were gathered via the questionnaire. Two of the boys answered that they were a little interested, two other boys said they were quite interested, and the last one answered that he was very interested. They all also reported that they found reading English just as easy as reading Norwegian, and some even said it was easier (Brevik, 2016, pp. 48-49). Four out of five of the boys also agreed that they were better readers of English than Norwegian, though they had not thought much about it (Brevik, 2016, p. 47). On the topic of motivation for reading texts, two of the boys (Student 4 and 5) said that they found it easier to understand texts when they found the topic interesting, with Student 4 claiming he would rather read "just … something that is interesting, instead of reading about … Napoleon, because I don't find that very interesting" (Brevik, 2016, p. 49). Student 5 said that he found it "[…] a bit more interesting… kind of," adding "It makes things a bit easier […] (Brevik, 2016, p. 49). He also talks about how it might be beneficial to read in English if he is to work in an English-speaking field or company, indicating that seeing some form of personal purpose (e.g., future job, interests, study programme) to the texts could be motivational for these two boys (cf. the concept of instrumental motivation discussed in section 2.2).

The boys' extramural English activities were as shown in *Figure 1*.

Figure 1 - The students' answers to the question: What do you read out of school? (from Brevik, 2019, p. 50).
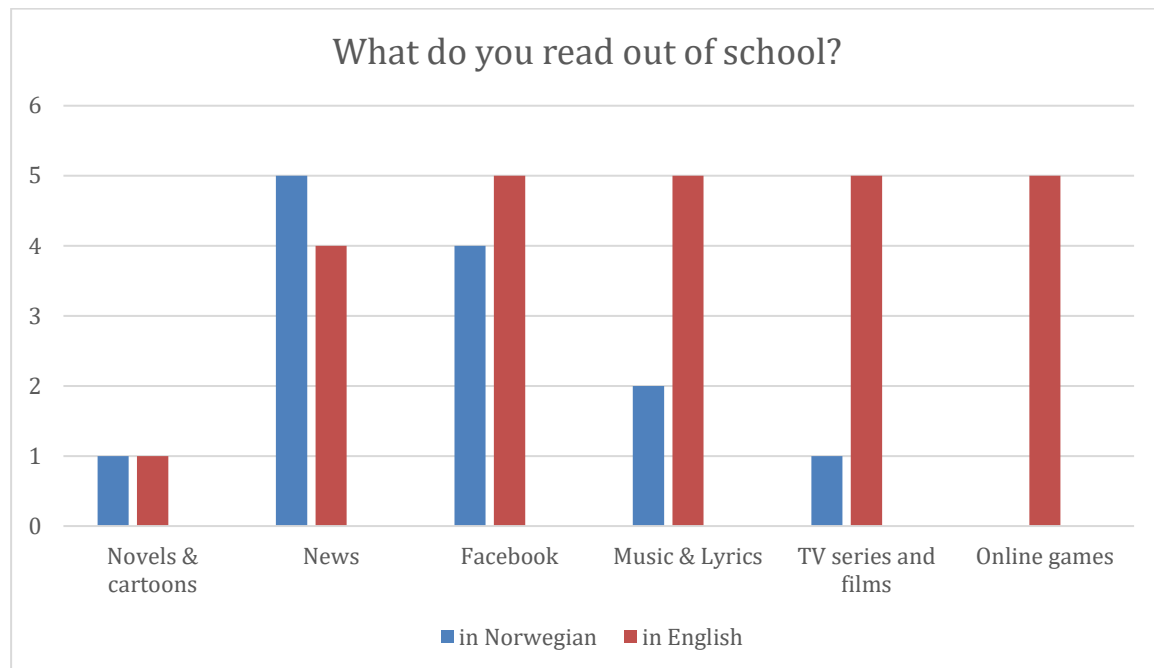
As shown in the figure, reading news , Facebook, music, TV and film, and online games were read by everyone. All the pupils reportedly read all of these in English, with the exception of one not reading the news in English. One of the pupils read novels and cartoons, both in English and Norwegian. The students all said they played online games for more than three hours a day, except for one who had recently reduced his online playing time to less than three hours a day (Brevik, 2016, pp. 50-51). This puts at least four of them in the frequent gamer-category as defined in other studies. The figure shows that except for reading the news, all the boys prefer reading in English outside of school, with one of the boys also reading novels and cartoons in both languages. Brevik notes that during the interviews the boys talked about their *use* of English in general, rather than their *reading* of English. Brevik suggests that the answers to the second research question lies within the pupils' usage of both languages in- and out of school when she says: "To examine more closely what these utterances might indicate, the following sections elaborate on their in-and out-of-school uses of English and Norwegian, focusing on their reading skills and reading activities in particular." (Brevik, 2016, p. 48). As the pupils could not explain why they were better readers of English than Norwegian, the data to the first research question ended up giving a possible explanation in

their extramural English activities. Due to the boys' heavy involvement in online gaming, Brevik decided to label them the "Gaming Outliers" (Brevik, 2016, p. 54).

This study, though interesting, must be read with caution. The results can certainly give insight into a pupil's situation as an outlier, but the small sample size means that the findings can not be generalised. A teacher can use the knowledge Brevik presents to make him- or herself familiar with how a pupil might experience language acquisition. The study can be used as a reference for how to approach a potential pupil, what questions to ask to gain insight into how to approach the pupil's language acquisition in the classroom. This is given that the pupil either fits into the outlier profile, or almost fits into it. A teacher can then find potential ways of, for example, using the pupil's interests in the classroom, as will be discussed in chapter 4.

3.3.2   Brevik (2019)

In the school year 2016-2017 Lisbeth Brevik wanted to study a group of statistical outliers when it came to reading comprehension in Norwegian, which was the L1 for most of them (though not all) and L2, English. Brevik had found and labelled the Gaming Outliers in the previously mentioned 2016 study, but this time went to find participants at another school. The participants were found and brought into the study after an upper secondary school with 280 pupils did reading tests for Norwegian and English. Any pupils that were both below a 20% intervention benchmark in Norwegian reading, and at the same time scoring above 60% on the English reading test were marked as outliers. 22 pupils were identified as meeting the criteria, and 21 chose to participate in the study. Two of the 21 pupils had different L1s than Norwegian, speaking Russian and Arabic. Vocational studies were heavily represented, as in Brevik et al. (2016), with 17 (16 boys and 1 girl), whilst general studies had 4 representatives (1 boy and 3 girls). Similarly to vocational studies being heavily represented, boys were too, just like in Brevik's previous research of the Gaming Outliers. Brevik identified the outliers and collected the data together with an MA student, Katharina Køber Garvoll (Brevik, 2019).

The data used in the study was gathered over a 6-month long period, divided into three phases: "Survey and focus group data collected concurrently among all 21 participants, as well as field notes of additional explanations", "Digital language logs collected for 2 weeks to validate outliers' responses over time. All 21 students were invited to participate; ultimately, 18 accepted and 13 participated", and "Stimulated recall interviews with the five students who completed the log for the full 2 weeks" (Brevik, 2019, p. 598).

After analysing the data material, Brevik made three profiles which all the outliers could fit into: The Gamer, the Surfer, and the Social Media User. These three profiles were based on the pupils' extramural English activities. The 16 boys were Gamers and Surfers, with eight of them in each category. The five girls filled the Social Media User-category. There were shared extramural English activities such as watching TV shows, social media usage, listening to music and reading lyrics, and watching films, among the three profiles. What ended up separating the profiles was how much time they spent on certain activities, this especially related to gaming habits (Brevik, 2019, pp. 599-600).

The gamers spent up to 8 hours a day playing games online. They attributed their proficiency in reading English to their gaming, as they mainly reported using English language when doing so. They did, however, participate in other extramural English activities, as shown in *Figure 2*. Brevik noted that the gamers were the only group that read printed novels. (Brevik, 2019, pp. 600-601).

Figure 2 - The Gamer: Accumulated log responses (34 days) for extramural English use (from Brevik, 2019 p. 601).
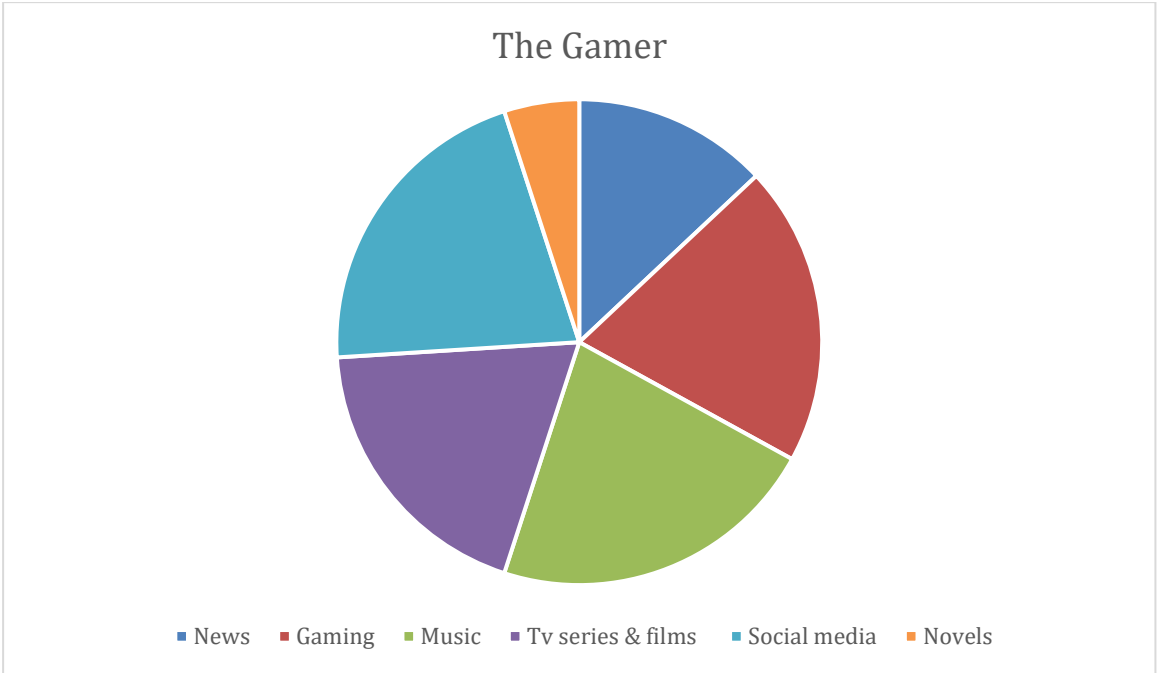
The Surfer profile had two main differences from the Gamer. Firstly, they simply spent less time gaming. The Gamer profile averaged 20% of reported extramural English activity spent gaming, while the Surfer profile averaged 8%, as shown in *Figure 3*. The second difference was the reading of novels reported by some of the gamers, which was non-existent in the

Surfer profile. The Surfer's extramural English is characterised by their aim for authentic language situations, with English as the main language. (Brevik, 2019, pp. 601-602).
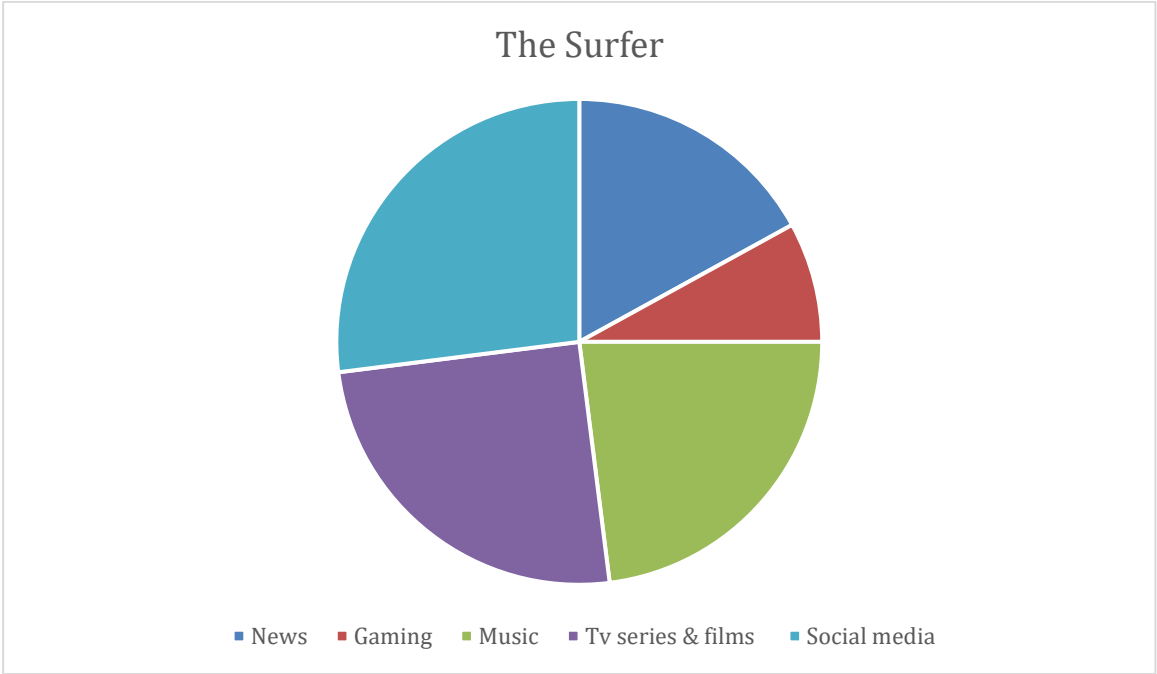
Figure 3 - The Surfer: Accumulated log responses (22 days) for extramural English use (from Brevik, 2019 p. 602).

The Surfer

■ News　■ Gaming　■ Music　■ Tv series & films　■ Social media

The Social Media User category consisted of girls who spent their time on fewer activities than the other profiles, in using social media, listening to music and reading lyrics, and watching media such as TV shows and films, as seen in *Figure 4*. Through the interviews Brevik learned that the girls preferred creating situations in which oral extramural English was the resource which helped develop their English reading proficiency. One of the girls explains how she speaks English to both foreign and Norwegian friends, as she finds it easier to express herself in said language, rather than Norwegian. The girls reportedly preferred extramural English, as opposed to Norwegian (Brevik, 2019, pp. 602-603).

The Social Media User

■ Music ■ Tv series, shows & films ■ Social media
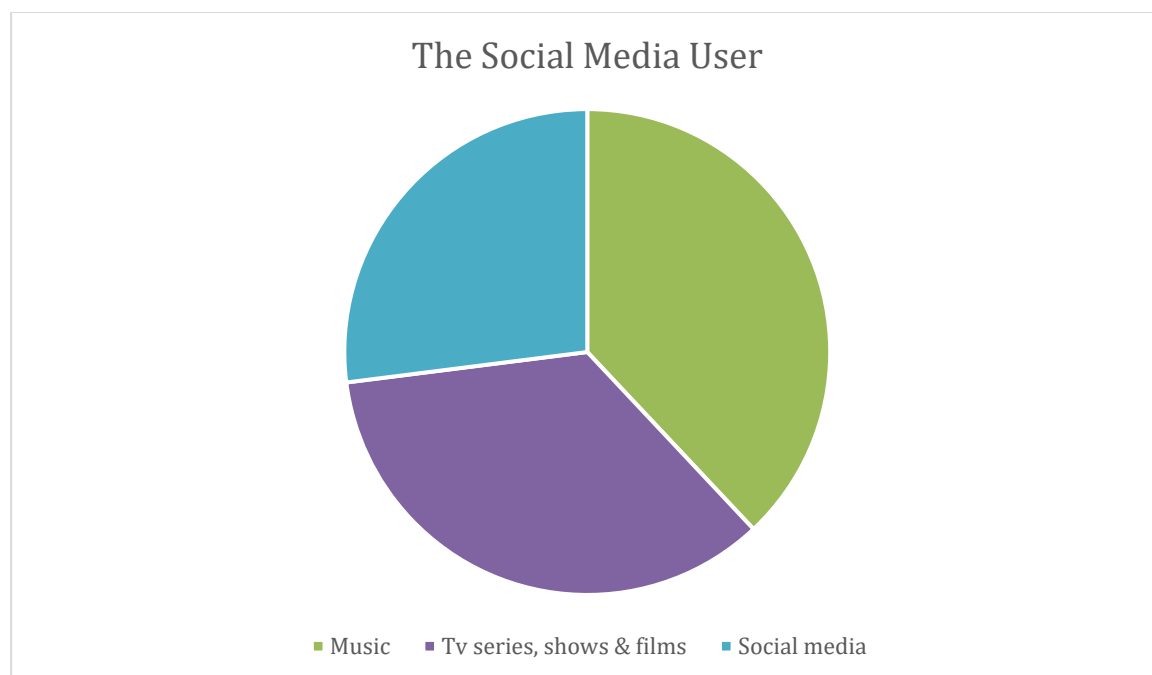
What all three profiles had in common was a shared interest for extramural English. Building on her 2016 study, Brevik realized that gaming was only part of the outliers' L2 development with surfing the Internet and using social media also being strongly represented in this study as explanations for their English reading proficiency. The study concludes with the same gender difference as previous research agrees with, that boys tend to spend more time gaming than girls do, as shown by the outlier profiles. Brevik says that girls' extramural English is characterized by a shift from gamers to non-gamers when they grow up, whereas boys growing up either shift from "Gamers" to "Surfers" by reducing their gaming, or stay "Gamers" (Brevik, 2019, p. 603).

Like Brevik (2016), this study is not generalisable. This due to the low sample size of participants in both studies, which can create large variances and skew the data heavily. The studies are both, nonetheless very interesting and valuable. They give qualitative insight into how some of the outliers in reading in L1 Norwegian and L2 English experience language acquisition with extramural English. This can for instance be applied in teaching if one encounters pupils who might fit into one of Brevik's (2019) profiles.

3.4   Gaming and general competence

Sundqvist and Wikström (2015) looked at the grades of the participants of Sundqvist's doctoral thesis (2009). What the grades show is that the frequent gamer's mean grade is

higher than the non- and moderate gamer's final grade in 8th grade, 9th grade, and the essay written in 9th grade. On the 9th grade essays, the frequent gamers mean grade was almost one whole grade (0.91) higher than the non-gamers on a scale from 1-10. The moderate gamers were even further behind, at a 5.31 mean score, compared to the frequent gamers' 6.94 and the non-gamers' 6.03 (Sundqvist & Wikström, 2015, p. 72).

A study by Mira Aaboen Sletten, Åse Strandbu and Øystein Gilje looked at organised sports and gaming, and their relations with grades in Norwegian school. The study looked at three subjects: Norwegian, English and Mathematics (Sletten et al., 2015, pp. 334-335). The number of girls who gamed is not high enough for the data on them to be significant, and girls were therefore not included in the results.

The boys were divided into three groups: (1) those who usually did not game, (2) those gaming less than 3 hours a day, and (3) those gaming 3 hours or more a day. The boys who gamed showed the lowest grades in both Norwegian and Mathematics. In English, they had the same mean as the ones who gamed some (1-3 hours) and those who did not game at all (Sletten et al., p. 341). This means that this study does not necessarily agree with what Sundqvist and Wikström (2015) found, as their study showed frequent gamers to have higher grades than moderate and non-gamers. Sletten et al. only found that frequent gamers have similar grades to moderate and non-gamers. It does still show that the frequent gamers are performing better (in relative terms) in English as a subject than other school subjects, in this case Norwegian and Mathematics. Another thing that the study showed was that the boys who often worked out in sports teams, and often gamed, had the highest mean grades in English. They share this top mean grade with boys who only worked out in sports teams, and did not game at all (Sletten et al., 2015, pp. 342-343). This also suggests that working out in sports teams also has a positive effect on grades. It can also be seen that the only subject where gaming and working out in sports teams is equal to only working out in sports teams is English. The mean grades for Mathematics and Norwegian are respectively 0.20 and 0.18 lower for those working out in sports teams and gaming than those only working out in sports teams (Sletten et al., 2015, p. 342). So, whereas working out in sports teams seem to have an overall positive effect on grading for Norwegian youth, gaming seems to impact the English grade positively relative to the other two grades.

4 Gaming, language acquisition and the classroom

The use of gaming in English teaching may be relevant in relation to various components discussed in the National Curriculum, vis. (1) the general view of the learner and of learning, (2) the core elements of the English subject (communication, language learning, and working with texts in English), (3) the learning of basic skills in English (oral skills, writing, reading, and digital skills), and (4) specific competence aims in the English subject. In the next two sections, we will look at each of these in turn. After the National curriculum has been presented, the last sections will discuss the usage of gaming and gaming experiences in the classroom.

4.1 The Core Curriculum

The core curriculum is part of the Norwegian curriculum and aims to function as an elaboration of the core values written in the objectives clause of the Education Act (1998, § 1-1), as well as the overriding principles. This applies to primary and secondary education and training in Norway. Further the core curriculum "[…] describes the fundamental approach that shall direct the pedagogical practice in all lower and secondary education and training. It shall also serve as the foundation for the collaboration between home and school." (Ministry of Education and Research, 2017, p. 1). The core curriculum therefore lays the foundation for how the teachers (as well as the schools, school leaders, school owners, and other professionals involved in the schools or training establishments) should approach all teaching and educating in school.

The values are described as "the foundation of our democracy" in the Core Curriculum (Ministry of Education and Research, 2017, p. 3), and are based on Christian and humanist heritage and traditions. The values are summarised in points. The three points relevant to gaming are: (1) identity and cultural diversity, (2) the joy of creating, engagement and the urge to explore, and (3) democracy and participation.

Identity and cultural diversity describe how school shall give the pupils historical and cultural insight, which then is meant to give the pupils a foundation to develop and preserve their own identity in a diverse and inclusive community. Learning about this has the purpose of creating solidarity and connecting the individual's identity to the greater community. (Ministry of Education and Research, 2017, p. 5). Teaching and training in Norwegian schools is therefore meant to ensure that the pupils are confident in their own language proficiency, helping them

develop their language identity, which then again will help them use language to think, communicate, connect with others, and create meaning. This is mainly related to the L1, mentioning the Norwegian written languages as well as the Sami languages. This value is related to foreign languages when it says that linguistic diversity provides all pupils in society with other cultures (Ministry of Education and Research, 2017, p. 4). Further it mentions that: "All pupils shall experience that being proficient in a number of languages is a resource, both in school and society at large." (Ministry of Education and Research, 2017, p. 4). It also elaborates on this in the last paragraph by saying:

> *In a time when the population is more diversified than ever before, and where the world is coming closer together, language skills and cultural understanding are growing in importance. School shall support the development of each person's identity, make the pupils confident in who they are, and also present common values that are needed to participate in this diverse society and to open doors to the world and the future. (Ministry of Education and Research, 2017, p. 6).*

This puts foreign language learning at the core values of Norwegian education, arguing that language is a resource that can be used to develop the pupils' identity, while also giving them a valuable tool to use in the global world.

The joy of creating, engagement, and the urge to explore is related to digital games in several ways. As discussed in section 2.2, audiovisuals and new technologies are motivating to pupils, engaging them in the teaching material. The teacher can appeal to certain pupils' intrinsic motivation in their teaching. Playing digital games is a common hobby among Norwegian pupils (especially boys), and using such an interest in the classroom can also be motivating (cf. Madrid, 2002). The pupils shall be allowed to experience this in ways that allow them to experience seeing opportunities and transforming ideas into practical actions. Asking questions, exploring, and experimenting are all important parts of in-depth learning in school. The pupils must therefore be subject to different ways of exploring and creating. Sensory perceptions and thinking, aesthetic forms of expression, and practical activities are all important parts of this. It is important to play in school, for the pupils' well-being and development. This is especially true for the youngest pupils, but play is also important for creating creative and meaningful learning for pupils all ages (Ministry of Education and Research, 2017, p. 7).

Another relevant core value from the Core Curriculum is democracy and participation. It is stated that the pupils shall be provided with the opportunity to learn about democracy by participating in it in practice. This means that the pupils should feel that they have impact on matters of their own concern, and that they are heard concerning the day-to-day affairs in school. (Ministry of Education and Research, 2017, pp. 8-9). This means that the pupils should also have influence over their day-to-day work in their subjects. This could mean that pupils express an interest in learning with for instance digital games, or elements of digital games, in the classroom. Whether this be something the pupils ask directly for, or the teacher creates an open dialogue with pupils, where he or she can suggest digital games as a tool based on pupils' interests. This point is further elaborated on in the Core Curriculum where it is written about developing an inclusive learning environment. The Ministry of Education and Research (2017, p. 15) states that pupil involvement must be part of the practice in school. The pupils are to participate and share responsibility with the teacher for the learning environment they create.

Differentiated instruction is something Norwegian schools are required to facilitate for the pupils. Every single pupil is different in terms of experiences, prior knowledge, attitudes, interests, and needs. This individuality means that the best way for a pupil to learn is not necessarily the same way their classmate learns. For the pupils to experience joy and motivation in and for learning in the teaching situations, a variety of different learning activities and resources within predictable frameworks are required (Ministry of Education and Research, 2017, p. 16). This relates back to Daniel Madrid's (2002) study on motivational factors in the classroom. The study showed that both "audiovisual and technological aids", and "satisfying needs and interests" were among the three highest scoring motivational factors measured. This will be discussed in more detail in section 4.3. Another important part of differentiated instruction is that it applies to all pupils in terms of variation and adaptation to the diverse groups of pupils within the learning environment (Ministry of Education and Research, 2017, p. 17). This means that gaming is not the only tool a teacher should use for teaching, though it leaves room for using gaming as a tool or resource to vary the pupils' learning.

4.2 Curriculum in English

4.2.1 About the subject

There are three core elements mentioned for the subject of English in Norwegian education: (1) communication, (2) language learning, and (3) working with texts in English (Norwegian Directorate of Education and Training, 2020, pp. 2-3).

The element of communication alludes to the creation of meaning through language as well as the ability to use the language in both a formal and an informal setting. Communication should be practiced both orally and in writing, and the pupils should be able to use suitable strategies to do so in different given situations, with different types of media. The language shall be explored and experienced from the beginning of the pupils' education. The teacher is responsible for giving the pupils the possibility to experience authentic and practical situations in which they can express themselves (Norwegian Directorate of Education and Training, 2020, p. 2).

Both written and oral communication is a big part of gaming, depending on which types of game you play. A pupil might have a lot of experience in oral communication as an extramural English activity via digital games. For instance, a pupil involved in a guild in *World of Warcraft* might regularly talk to their friends on a voice programme such as Discord or Skype. Other games such as *Call of Duty* and *Overwatch* have the possibilities for talking to your team via an in-game voice chat. Online games do not necessarily mean that you experience oral communication at all. For example, Sundqvist (2019) reports of a girl, Jessica, who wrote a great deal in-game, as she was afraid to speak. Communicating with others is not as relevant for those who play single player games, where the social interaction is minimal, as the player interacts with the environment and world in the game, and no other players. These players can for instance communicate *about* their gaming in affinity groups, where they can communicate with people who share their interests for a certain game. They might not even do this; in which case they will only receive input from playing the game itself, and no oral output or interaction.

Language learning in the English subject is a large part of the focus in chapter 3 of this thesis (though the term language acquisition is used, as explained in section 2.1). The curriculum states that language learning in English is about developing language awareness and knowledge of English as a system, and the ability to use language learning strategies. The

pupils are to be given different choices in their communication and interaction by learning about pronunciation of phonemes, and learning vocabulary, word structure, syntax, and text composition. (Norwegian Directorate of Education and Training, 2020, pp. 2-3). Research on some of these points have been covered in chapter 3, such as vocabulary and general language competence. In section 4.4 examples of how gaming experiences can be used in the classroom are given, for instance to work with writing or oral skills.

When talking of working with texts in English, the curriculum defines the term "text" in a broad sense:

> *texts can be spoken and written, printed and digital, graphic and artistic, formal and informal, fictional and factual, contemporary and historical. The texts can contain writing, pictures, audio, drawings, graphs, numbers and other forms of expression that are combined to enhance and present a message (Norwegian Directorate of Education and Training, 2020, p. 3).*

By working with texts like this in English the pupils are supposed to develop their knowledge and experience of linguistic and cultural diversity. (Norwegian Directorate of Education and Training, 2020, p. 3). The description of language learning comments on much of the same as the Core Curriculum does when it talks about foreign language learning in relation to identity and cultural diversity. Different types of texts are supposed to help the pupils develop intercultural competence by having them reflect on, interpret, and critically assess said texts. This will help the pupils by giving them tools and knowledge to deal with different ways of living, ways of thinking, and patterns in communication. The pupils will build a foundation where they can see their own identity and others' identities in the context of a multilingual and multicultural society (Norwegian Directorate of Education and Training, 2020, p. 3).

With the broad definition of text in mind one can say that digital games can be used as text. Not all digital games can be said to fit into this category in the same way as others. A single player game based around creating a world and telling a story has many parallels with a book. There are even digital games based on books, such as *The Witcher*-games, which then again was adapted into a TV-series on Netflix.

4.2.2 Basic skills

The basic skills in English education are: (1) oral skills, (2) writing, (3) reading, and (4) digital skills (Norwegian Directorate of Education and Training, 2020). Norwegian education

also includes a fifth basic skill, numeracy, which is not directly mentioned in the English Curriculum (Ministry of Education and Research, 2017, p. 11). The basic skills are viewed as an important part of the pupils' developing of their identity and social relations in school, their participation in education, as well as work and society at large. They are connected to one another, and they are generally a part of all the subjects, though some subjects carry a more natural responsibility for some of the skills than other subjects (Ministry of Education and Research, 2017, p 11). This can for instance be seen in the English curriculum not mentioning numeracy.

The first basic skill that is mentioned is oral skills. In English, oral skills are closely related to the communication-part of the three core elements mentioned in section 4.2.1(the other two elements being language learning, and working with texts in English). Within the subject, oral skills are creating meaning both when listening, talking, and engaging in conversations with others. Presenting information, adapting language to the purpose, situation and receiver, and using strategies suitable for this are mentioned as being an important part of oral skills. The development of the oral skills in English means that the spoken language will be used more gradually, more accurately, and with more nuances across the school years. This development is meant to give the pupils the resources to communicate with others on various topics, both formally and informally, to various participants of conversation, with varying linguistic backgrounds (Norwegian Directorate of Education and Training, 2020, p. 4). As the research presented on oral proficiency suggests, gaming is relevant when it comes to developing speaking and oral communicative skills. Whether this can be adapted into the classroom in some way is something that will be further discussed in section 4.3 and 4.4.

Writing in English is about expressing opinions and ideas appropriately and understandably in different types of text. Written texts are to be both on paper and on screen. As with oral skills, the communication done via written text should have language adapted to the situation and purpose, receiver, and situation. Similarly to all the basic skills, the development part starts with the basics, in this case with learning and writing single words, then phrases, and at last using this knowledge to write coherent texts to express and present knowledge and different viewpoints. Using and being critical of sources is also relevant to writing as a basic skill (Norwegian Directorate of Education and Training, 2020, p. 4). Writing requires planning, formulating, and processing of text to communicate. Writing as a skill was not treated as a separate topic in chapter 3. However, two of the studies on vocabulary (Sundqvist & Wikström, 2015 & Sundqvist, 2019) discussed there based their conclusion partly on the

participants' written essays. Written texts also served as input in evaluating pupils' general competence.

To be able to communicate in written English, being able to read is a prerequisite. In Norwegian school, reading in English is to understand and reflect on the content of various types of texts, on paper and on screen, as well as contributing to reading pleasure and language acquisition. To do so, the pupils will have to read and find information in multimedia texts, and use reading strategies to read and understand both explicit and implicit information and messages. When developing reading in English, the pupils will start out with experimenting with phonemes and speech sounds, to spelling patterns and syllables, and eventually reading complex and varied texts. The reading of texts will get better, and the aim is to read the texts with fluency and comprehension, increasingly becoming able to assess and critically reflect on varied types of texts (Norwegian Directorate of Education and Training, 2020, p. 4). The research presented on reading in English in section 3.3 mainly talks about outliers scoring at a high percentile in reading English, and a low percentile in reading Norwegian. What Brevik (2016 & 2019) argued was that these outliers developed their reading comprehension by interacting with extramural English activities, of which gaming was strongly represented.

In Norwegian schools, working with digital skills in English is about using the digital media and resources to strengthen language acquisition. It is also a resource that can be used to introduce the pupils to authentic language models, authentic language situations where they communicate with other English-speakers, and to generally find accessible information in English. When working with a digital medium the pupils must be taught about, and practice critical behaviour online. There are expressions that can be unique (or more common) in the digital world, and thus learning about and using "digital language" in communication with others is part of digital skills in English. The development process of digital skills in English starts out with exploring English language and interacting with others, to creating texts, and building knowledge by exploring and critically evaluate information gathered from various sources in English (Norwegian Directorate of Education and Training, 2020, p. 4).

4.2.3 Competence aims

The Curriculum in English has 19 competence aims after year 10. The competence aims presented below will be those related to using gaming and gaming experiences in school. It is worth noting that covering these competence aims is a process, happening during the pupils'

education. The following competence aims apply to the pupils from 8th-10th grade. This means that gaming and gaming experiences will only be part of this process and will function as a resource to reach the competence aims.

The first competence aim says that the pupil is expected to "use a variety of strategies for language learning, text creation and communication" (Norwegian Directorate of Education and Training, 2020, p. 8). Using something like gaming or gaming experiences in school could be a way for the teacher to give the pupils different strategies to work with the core elements of language learning, text creation and communication. Using a game such as *Minecraft* in the classroom would put the pupils in a different world, in which they would have to use certain words and describe certain actions when talking about it. If they were to use their experiences with such games to work on the core elements, then their tasks would draw inspiration from an entirely different setting than what using their real-life experiences or texts they have read would.

To "use different digital resources and other aids in language learning, text creation and interaction" (Norwegian Directorate of Education and Training, 2020, p. 8) is something the pupil is expected to do. While gaming may not be the primary idea for this aim, it can still be interpreted that way, giving further options to explore the medium. It can both be used as the primary aid for text creation and interaction, like using an in-game chat to interact. Or as an indirect aid, where the topic of a conversation or a text is based in gaming experiences. Similarly, the third competence aim: "use key patterns of pronunciation in communication" (Norwegian Directorate of Education and Training, 2020, p. 8) is relevant in relation to other competence aims as well, if there is oral communication.

Competence aim four says that the pupil is expected to "listen to and understand words and expressions in variants of English" (Norwegian Directorate of Education and Training, 2020, p. 8). Gaming and the internet as a whole is a place to encounter people of different countries, nationalities, cultures etc. It is therefore an arena that can be utilised when working towards this competence aim. As some games also tend to have an audio-component to them, in terms of voice-acting, one can also a variation of words and expressions in English.

It is stated that the pupil is expected to be able to "express himself or herself with fluency and coherence with a varied vocabulary and idiomatic expressions adapted to the purpose, receiver and situation" (Norwegian Directorate of Education and Training, 2020, p. 8). Games

as an arena, or games as a subject, are both specific situations, which can be part of covering this competence aim.

The last competence aim that can be directly related to gaming is to "ask questions and follow up input when talking about various topics adapted to different purposes, receivers and situations" (Norwegian Directorate of Education and Training, 2020, p. 9). Much like reading a book or watching a video can leave room for asking questions follow up input, so can pupils do when they game or when finished and discussing the game. If the game played has any written or spoken story, or the discussion moves to a place where certain phrases or words are uttered, one can even relate it to Long's (1996) negotiation of meaning discussed in section 2.3. Games are an arena where pupils can encounter words of different genres, such as the fantasy-MMO *World of Warcraft*, where potential new words such as 'quest', 'dungeon', 'level', and 'druid' might be encountered for the first time.

There are also a few competence aims that can be related to using gaming experiences in the classroom. Three of them can all be directly related to writing texts about gaming:

- use knowledge of word classes and syntax in working on own oral and written texts
- follow rules for spelling, word inflection, syntax and text structure
- write formal and informal texts, including multimedia texts with structure and coherence that describe, narrate and reflect, and are adapted to the purpose, receiver and situation (Norwegian Directorate of Education and Training, 2020, p. 9).

The first two competence aims focus on the technical parts of writing, in structuring sentences, words, creating meaning, spelling, and general text structure. The last aim also mentions text structure, with a focus on the text as a whole. This competence aim, like several already mentioned, also creates an expectation for the pupil to be able to adapt their text and language to the purpose, receiver and situation. Section 4.4 will elaborate on using gaming experiences in working with texts.

The last competence aim relating to working with gaming experiences is: "describe and reflect on the role played by the English language in Norway and the rest of the world" (Norwegian Directorate of Education and Training, 2020, p. 9). For this competence aim, gaming is one of many contexts which the pupils can discuss the role of the English language both in Norway and as a global language.

4.3 Using gaming in the English classroom: difficulties and pedagogical challenges

In the previous section, I mentioned some ways that gaming and specific games can be used in working with core values and elements as well as specific competence aims in the National Curriculum. However, it has been pointed out that introducing gaming into the classroom is not unproblematic. When discussing this issue, there is one obvious problem that that should be addressed at first. That difficulty is the possible limitations of both hardware and/or software. When it comes to hardware, there are several glaring issues that can be present. Firstly, the school may just not have (enough) computers, iPads, or similar digital tools available for the pupils. Depending on the type of game, it might still be possible to go through with the teaching plan if the pupils have access to phones. This will again depend on whether all pupils need to play separately, in which case everyone needs a phone for this. If the game and teaching plan allows for it, then the pupils can play in pairs or groups. Something like this would require the teacher to discuss and agree on this with the pupils beforehand. Other limitations with hardware may be that it simply does not work with the software (game), either because of compatibility issues or because the software is too demanding. This might especially be the case for newer games. A possible solution to this compatibility issue would be to explore whether there are any similar digital games that could fill the same purpose as the original game. If this is not possible then the teacher might need to look for other resources to use for the teaching plan.

Aleksander Husøy (2021), one of two founding members of a group called Spillpedagogene (the 'game educators'), discusses his frustrations with trying to incorporate games into some of his teaching plans. He mainly discusses his experiences with difficulties with acquiring digital games for schools. He organises his experiences into five points, addressing game developers- and publishers, and Norwegian authorities. His first two points are about accessibility for the schools. (1) Book publishers and film producers make their products accessible for teachers and educators. Buying games in sets for classes is not often enough manageable for teachers without having to spend a lot of energy on it. (2) games are expensive. In some cases, as time passes, games simply do not sell as well as when they first come out. A game is announced and advertised, so people want to play the game. It is released and sells decently, earning the company a nice profit in the end. A few years later, the game is still available for purchase, but the sales and players have drastically dropped, as newer and more exciting games have taken over. Maybe the price tag has dropped, as often

seems to be the case, or maybe the game is still sold at full price. Husøy urges the game developers- and publishers to consider making their games free or almost free for educational institutions. (3) require game developers and publishers to make distribution possible for educational institutions. Husøy addresses the Norwegian Film Institute (NFI) and the Ministry of Culture when pointing to this. He draws a parallel with NFI giving grants meant to stimulate the part of the computer game industry that develops and distributes computer games with cultural and artistic content, as stated by the *Forskrift om tilskudd til utvikling, lansering og formidling av dataspill* (§ 1-1) (Regulations on grants for development, launching and distribution of computer games). Husøy says that NFI and the Ministry of Culture should demand that the developers that receive such grants are obligated to distribute their games to schools. (4) make agreements to make it easier for teachers to acquire games. He addresses the school owners, municipalities, and county municipalities and their roles in this. Husøy (2021) has used digital games extensively in his teaching for almost ten years, and he does still not feel like he has enough competence when it comes to legislations, licensing, purchasing, distribution, and installation of games. It is also a process that demands a lot of a teacher's already valuable time. (5) facilitate competence building and transfer of competence in using gaming in school. In this last point Husøy addresses the Ministry of Education and Research and the Norwegian Directorate of Education and Training. The game educators (n.d.) believe that video games are an underutilised tool in Norwegian schools. Husøy (2021) therefore suggests that these that the ministry and directorate adapt education in a way that allows for building and transferring of competence in the field. He claims that the effort being put into developing and fostering knowledge of digital gaming in schools currently sits with passionate individuals. Husøy wants systems built to cultivate this knowledge, which is why he addresses the ministry and its subordinate agency. All of these points seem to capture a view of the individual teacher's large responsibility if they are to incorporate digital games in their teaching plans. If this really is the case then that can be largely problematic, and Husøy's pleas to the game developers- and publishers, and Norwegian authorities might need to be heard to normalise digital games in the classroom.

There are also challenges related to age limit recommendations. In Norway, digital games have an age rating based on several factors, such as violence, bad language, sex, gambling, and similar factors that can be deemed inappropriate for some ages. Games are given an age rating of either 3, 7, 12, 16 or 18, as illustrated in *table* by the Pan European Game Information (PEGI). Games can also receive labels warning against certain inappropriate

content, and not only an age rating. These labels warn against violence, bad language, fear, gambling, sex, drugs, discrimination, and in-game purchases.

Age group	Description
3	Games suitable for all age groups. These games do not have any sounds or pictures likely to scare young children. Bad language is unheard of, and violence can only occur in a mild form, if it is in a comical or childlike context.
7	Games with sounds or pictures that can possibly scare young children are moved up to a PEGI 7 rating. Games in this category can also have very mild forms of violence, such as implied, non-detailed, or non-realistic violence.
12	The digital games rated as PEGI 12 show slightly more graphic violence against fantasy characters, or non-realistic violence against human-like characters. Bad language is tolerated, as long as it is mild. Sexual innuendo and posturing are also allowed.
16	The PEGI 16 rating is applied if the violence or sexual activity present in the game is of a realistic nature. Bad language can be more extreme that in the PEGI 12-games, and usage of tobacco, alcohol or illegal drugs can also be shown.
18	A digital game is rated as PEGI 18 when the violence is at a stage of depicting gross violence, the killings appear to be motiveless, or defenceless characters experience violence. If illegal drugs are glamorised, a game would also be put in this category, as well as explicit sexual activity or any form of encouraging or teaching of gambling (though some older game titles with a PEGI 12 or 16 rating have this, as it was exclusively put in the PEGI 18 rating in 2020).

Table 9 - PEGI age ratings explained (adapted from PEGI, n.d.)

Rating digital games in this way is bound to have its limitations. Skaug, Husøy, Staaby and Nøsen (2020, p. 134) gives an example of a discussion on the game *Plague Inc: Evolved*. The game is a is a strategic game where the end goal of the player is to end all of humanity by inflicting a pandemic onto the world in what they describe as a horribly realistic simulation. The game has a rating of PEGI 7, as there is no visible violence, nor any scary pictures. The

violence is only implied, hence the rating of PEGI 7. A teaching student commented on this during a course by the then Norwegian Centre for ICT in Education, saying how allowing pupils to play a game like this would be completely morally unacceptable. This was argued because of the game's ultimate goal being eradicating humanity, whether the violence is implied or not, the student claimed the game was the most violent game they had seen. *Plague Inc: Evolved* is likely not the only game where a conflict like this may arise. Due to the black and white age rating of digital games people are bound to disagree with some ratings. If one is to use a video game that either has a higher age recommendation than the pupils' ages, or that might just have potentially triggering content, then a dialogue with and/or a letter to the pupils' parents should be initiated/sent.

Husøy's (2021) suggestions to improve the accessibility of video games in school apply to directly using video games in the teaching plans. It mainly applies to situations in which one would need several copies of a game. However, Ostenson (2013) suggests than one may instead use a collective playthrough, which requires only one copy of the game. This would mean that the economical and organisational aspects of buying digital games are not as heavy as they would be if the entire class was to play the game. Ostenson (2013, p. 73) talked with his pupils about storytelling in different media, starting out with ancient Greco-Roman and Norse myths, modern hero (archetypes) journeys such as Frodo Baggins from *Lord of the Rings* and Harry Potter from *Harry Potter.* After this he transitioned to the storytelling in films, which then lead to him exploring digital games as a narrative medium. Most students said they played digital games, but not all of them had experienced digital games telling stories, rather playing games that challenged their coordination and reflexes.

The first game they played, a text-based adventure game named *Zork I*, was available to them online, which allowed all the pupils to access it for free. The game was first played collectively, with Ostenson (2013, p. 73) modelling how to play the beginning of the game. After a collective 'gaming-session', the pupils got to explore the game by themselves. This allowed Ostenson to first introduce the pupils to the game as a narrative tool. The game itself is nothing more than a programme that reacts to the player typing commands such as "take sack" or "go north". His pupils referred to the game as "old fashioned", as its reliance on text only differ heavily from modern games with more advanced mechanics and visual world building (Ostenson, 2013, pp. 73-74).

After having introduced the text-based game, Ostenson moved on to more modern games, with modern graphics and controls. The first digital game they explored was an adventure game from 1993 called *Myst*. To work around the economic issues Husøy (2021) discussed, Ostenson (2013, p. 74) used the classroom PC and projector to play and explore the game together with the pupils. They explored storytelling elements in *Myst,* which they then compared to the storytelling of *World of Warcraft* after introducing the MMO.

After two adventure-focused games were explored, Ostenson (2013, pp. 75-76) introduced *The Sims*-games*,* a game series focused on 'life simulation' where you can control a single avatar, household, or even cities of individual characters. He did this to create a contrast, which was meant to spark conversation between the pupils, comparing the story-telling elements of *The Sims* to the previous games they played. Ostenson (2013, p. 76) mentions a game he had recently incorporated in his teaching, called *Dear Esther*. This game had a focus on narration and exploration, and he believes that the game can be helpful to show the storytelling potential of video games to pupils.

As discussed in section 2.3, input, output, and interaction are important parts of language acquisition. Part of input can come from texts and spoken words, such as storytelling from video games. The games and game experiences can, as discussed in section 2.3 and 4.2.3, be valuable resources to facilitate pupils' input, output, and interaction in the classroom.

Using pupils' interests has been discussed as part of motivation in section 2.2, as well as its importance relating to differentiated instruction discussed in section 4.1. With having discussed the usage of gaming in the classroom in section 4.3, it is also important to acknowledge that not all pupils will have any interest in gaming, or even be familiar with it. This is especially true for girls, as boys tend to game significantly more than girls (cf. section 1.1). There are two clear ways this can be handled. The first one, as suggested by Sundqvist and Sylvén (2016, p. 171), is to have the experienced gamers introduce their peers to gaming, in a peer-to-peer scaffolding (cf. section 2.3). The other way this could be handled is for the teacher to simply plan something different for the pupils not interested in this. This could ensure that the pupils not interested in gaming at all do not feel like their voices are not being heard in day-to-day affairs (cf. section 4.1).

4.4   Building on gaming experiences in the classroom

While bringing games themselves into the classroom might have its problems and difficulties, it is not the only way to work with gaming in class. As mentioned above, one may also use pupils' gaming *experiences* in various types of written and spoken tasks, e.g., allowing pupils to write about gaming, give presentations on gaming, and discuss gaming with their classmates. Gaming as a topic is as fit as any other topics to allow pupils to practice their written and spoken language skills, and, as shown by Madrid (2002, cf. section 2.2), using pupils' interests in teaching is highly motivating. Using pupils' interests in teaching is also very much in line with the ideal set forth in the National Curriculum of the engaged pupil who is an active participant in his/her own education (cf. section 4.1).

Pupils' interest will always differ, which means that if the teacher wants to use that to motivate the pupils, the teacher might need to vary the contents of the teaching plan. If a teacher, for instance, has a teaching plan for around three lessons focusing on producing and working with text, it can incorporate gaming. Competence aims discussed in section 4.2.3 will be used to shape the teaching plan, which the teacher will then follow when teaching. The teacher can approach the teaching plan from several angles, to include the pupils' interests. The tasks can focus on the pupils producing text with a free choice of topics. The teacher can then explicitly encourage the pupils to write about their interests. Depending on how well the teacher knows their pupils, they can also create writing tasks based on their knowledge of collective interests within the group of pupils. Interests such as gaming, football, TV-shows, or skiing can be either given explicitly, or suggested as topics for their writing. When talking of the topic of gaming specifically, there can be created writing tasks where the pupils must immerse themselves into gameplay, a game world, write factually about a game, or even write about their experience with gaming. There are countless possibilities for how one can work with gaming as an interest in the classroom.

Sundqvist and Sylvén (2016, p. 172) suggest that gamers bring their potentially unique exposure to certain words to the classroom. This would function as scaffolding (cf. section 2.3). The pupils would then introduce the other pupils to new words, as well as being able to discuss how the words are used in the game and can be used in more general contexts.

5 General discussion and conclusion

This thesis set out to answer the following research questions:

(1) What does research say about extramural gaming and L2 English learning for teenagers?

(2) How can research about gaming and L2 English learning for teenagers be used in the Norwegian lower secondary school classroom?

Regarding research question (1) research painted a picture of the effect of gaming on oral proficiency, vocabulary and overall English proficiency being a positive one on Scandinavian pupils. It also showed outliers who read significantly better in their L2 (English) than in their L1 (Norwegian). Profiles presented based on extramural English activities. Most studies showed that boys preferred gaming as their extramural English activity, whereas girls preferred activities such as watching TV-shows and browsing social media. These other activities were shown to be less beneficial to language acquisition, making girls lag behind boys in proficiency tests. What part of gaming that causes this is not something that can be commented on with certainty. Input, output and interaction were presented in this thesis, and have been theorised to play a part in the effect of gaming on language acquisition. Sundqvist (2013, 2019) theorised that social interaction played its part in vocabulary acquisition, where time spent gaming rather seemed to be the decisive factor, though time spent gaming also correlated with type of game played. The most "hardcore" gamers played games with more social interaction. In sum, gaming seems to have a positive effect on English language acquisition.

As for research question (2), the presented research implies that extramural gaming has positive effects on pupils' English proficiency. The Norwegian national curriculum and other frameworks for education enables the teachers to use tools such as gaming in the classroom. By playing into the pupils' interests, the teacher can motivate the pupils for language acquisition. There are countless possibilities for using gaming in the classroom, both directly and indirectly (using gaming experiences). There are elements that need to be considered if one is to do so. Challenges such as accessibility of games, or considerations as to whether certain games are appropriate for the pupils, should be faced by the teacher. Some form of dialogue with the pupils can also be considered, in order to give them influence in their own learning (cf. section 4.1). The national curriculum emphasises points such as the pupils'

participation in their own education, and gaming and gaming-related activities may contribute towards reaching a number of competence aims.

As gaming has become a significant presence in pupils' everyday lives, research on its effects on topics such as SLA are important. One important goal of this thesis has been to discuss how gaming and gaming experiences can be brought into the Norwegian lower secondary classroom as a resource in English language acquisition. The next natural step might be to see whether bringing gaming and gaming experiences into the classroom brings any results. Diving deeper into the Norwegian classroom and trying to use digital games in teaching in some way could potentially yield useful information. Depending on the size of such a study, it could focus on specific elements in language acquisition, such as oral proficiency (cf. section 3.1) or vocabulary (cf. section 3.2). Focusing research on something like this could help identify learning effects, aspects of the teaching that need to be changed, pupils' motivation or similar elements of the teaching plan.

English language acquisition is an important part of Norwegian education. If gaming can be a tool in helping the pupils learn the language, that is a good thing. For those teachers who share this interest with the pupils; maybe it is time to give it a try in the classroom!

Bibliography

Bakken, A. (2020). *Ungdata 2020: Nasjonale resultater.* NOVA, OsloMet

Brevik, L. M. (2016). The gaming outliers: Does out-of-school gaming improve boys' reading
skills in English as a second language? In E. Elstad (ed.), *Educational technology and
polycontextual bridging* (pp. 39– 61). Rotterdam, Netherlands: Sense Publishers.

Brevik, L. M. (2019). Gamers, Surfers, Social Media Users: Unpacking the role of interest in
English. *Journal of Computer Assisted Learning, 35*(5), 595-606.
https://doi-org.mime.uit.no/10.1111/jcal.12362

Brevik, L. M., Olsen, R. V., & Hellekjær, G. O. (2016). The complexity of second
language reading: Investigating the relationship between L1 and L2 using upper
secondary level national reading tests. *Reading in a Foreign Language, 28*(2), 161-
182. Retrieved from http://hdl.handle.net/10125/66899

Dörnyei, Z. (2000). Motivation in action: Towards a process-oriented conceptualisation of
student motivation. *British Journal of Educational Psychology, 70*(4), pp. 519-538.
https://doi.org/10.1348/000709900158281

Dörnyei, Z. (2001). *Motivational strategies in the classroom.* Cambridge: Cambridge
University Press.

Dörnyei, Z., & Ushioda, E. (2009). *Motivation, language identity and the L2 self.* Clevedon,
UK: Multilingual Matters.

The Education Act. (1998). *Act No. 61 of 17 July 1998 relating to Primary and Secondary
Education and Training.* Retrieved from:
https://lovdata.no/dokument/NLE/lov/1998-07-17-61

Forskrift om tilskudd til utvikling, lansering og formidling av dataspill. (2021). (FOR-2021-
02-23-557) Retrieved from: https://lovdata.no/dokument/SF/forskrift/2021-02-23-557

Gass, S. M., Behney, J., & Plonsky, L. (2013). *Second Language Acquisition: An
introductory course.* (4th ed.). New York: Routledge.

Gardner, R. C. (1985). *Social psychology and second language learning: The role of attitudes and motivation.* London: Edward Arnold.

Gardner, R. C., & Lambert, W. E. (1972). *Attitudes and motivation in second language learning.* Rowley, MA: Newbury House.

Gee, J. P. (2003). *What video games have to teach us about learning and literacy*. New York: Palgrave Macmillan.

Husøy, A. (2021, 15. March). Fem tiltak for å gjøre spill mer tilgjengelige for skolen. [Blog post]. Retrieved from: https://www.spillpedagogene.no/2021/03/15/fem-tiltak-for-a-gjore-spill-mer-tilgjengelige-for-skolen/

Krashen, S. D. (1982). *Principles and practice in second language acquisition.* Oxford: Pergamon Press

Laufer, B., & Nation, P. (1999). A vocabulary-size test of controlled productive ability. *Language Testing*, *16*(1), 33–51. https://doi.org/10.1177/026553229901600103

League of Legends World Championship. (n.d.). In *Wikipedia*. Retrieved November 25, 2020, from https://en.wikipedia.org/w/index.php?title=League_of_Legends_World_Championship&oldid=990600346

Long, M. H. (1983). Native speaker/non-native speaker conversation and the negotiation of comprehensible input. *Applied Linguistics*, *4*(2), 126-141. https://doi.org/10.1093/applin/4.2.126

Long, M. H. (1996). The role of the linguistic environment in second language acquisition. In W. Ritchie & T. Bhatia (Eds.), *Handbook of second language acquisition* (pp. 413-468). San Diego: Academic Press.

MacIntyre, P. D. (2007). Willingness to Communicate in the Second Language: Understanding the Decision to Speak as a Volitional Process. *The Modern Language Journal (Boulder, Colo.)*, *91*(4), 564–576. https://doi.org/10.1111/j.1540-4781.2007.00623.x

Madrid, D. (2002). The power of the FL teacher's motivational strategies. *Cauce (Sevilla)*, (25), 369-422.

Masgoret, A-M., & Gardner, R. C. (2003). Attitudes, motivation and second language learning: A meta-analysis of studies conducted by Gardner and associated. *Language Learning, 53*(1), 123-163. https://doi.org/10.1111/1467-9922.00212

Medietilsynet (2020). *Barn og medier 2020 – Gaming og pengebruk i dataspill (Delrapport 3).* Retrieved 10.04.20 from: https://medietilsynet.no/globalassets/publikasjoner/barn-og-medier-undersokelser/2020/200402-delrapport-3-gaming-og-pengebruk-i-dataspill-barn-og-medier-2020.pdf

Ministry of Education and Research. (2017). *Core curriculum – values and principles for primary and secondary education.* Retrieved from: https://www.udir.no/lk20/overordnet-del?kode=eng01-04&lang=eng

Muñoz, C. (2020). Boys like games and girls like movies: Age and gender differences in out-of-school contact with English. *Revista Española De Lingüística Aplicada/Spanish Journal of Applied Linguistics, 33*(1), 171-201. https://doi.org/10.1075/resla.18042.mun

Nation, P. (2001). *Learning vocabulary in another language.* Cambridge, UK: Cambridge University Press.

Norwegian Directorate of Education and Training. (2020). *Curriculum in English* (ENG01-04). Retrieved from: https://data.udir.no/kl06/v201906/laereplaner-lk20/ENG01-04.pdf?lang=eng

Ostenson, J. (2013). Exploring the Boundaries of Narrative: Video Games in the English Classroom. *English Journal, 102*(6), 71-78. Retrieved from: https://www.jstor.org/stable/24484129

Pan European Game Information (n.d.) *What do the labels mean?* Retrieved 09.05.21 from: https://pegi.info/what-do-the-labels-mean

Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics, 11,* 129-158. https://doi-org.mime.uit.no/10.1093/applin/11.2.129

Skaalvik, E. M. & Skaalvik, S. (2011). *Motivasjon for skolearbeid*. Trondheim: Tapir
    Akademisk Forlag

Skaalvik, E., & Skaalvik, Sidsel. (2015). *Motivasjon for læring: Teori og praksis*. Oslo:
    Universitetsforlaget.

Skaug, J., H., Husøy, A., Staaby, T., & Nøsen, O. (2020) *Spillpedagogikk: Dataspill i
    undervisningen.* Bergen: Fagbokforlaget.

Skehan, P. (1989). *Individual differences in second-language learning.* London: Edward
    Arnold

Sletten, M. A., Strandbu, Å., & Gilje, Ø. (2015). Idrett, dataspilling og skole – konkurrerende
    eller «på lag»?. *Norsk Pedagogisk Tidsskrift, 99*(5), 334–350.

Spillpedagogene (The Game Educators). (n.d.). Om spillpedagogene. Retrieved 10.05.21 from:
    https://www.spillpedagogene.no/about/

Steinkuehler, C. A. (2008). Massively Multiplayer Online Games as an Educational
    Technology: An outline for Research. *Educational Technology, 48*(1), 10-21.
    Retrieved from http://www.jstor.org/stable/44429539

Sundqvist, P. (2009). *Extramural English Matters: Out-of-School English and Its Impact on
    Swedish Ninth Graders' Oral Proficiency and Vocabulary* (PhD dissertation). Karlstad
    University, Karlstad. Retrieved from
    http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-4880

Sundqvist, P. (2013). The SSI Model: Categorization of Digital Games in EFL Studies. *The
    European Journal of Applied Linguistics and TEFL*, 2(1), 89-104. Retrieved from
    https://link.gale.com/apps/doc/A528960769/AONE?u=unitroms&sid=AONE&xid=28
    4c7b1c

Sundqvist, P. (2019). Commercial-off-the-shelf games in the digital wild and L2 learner
    vocabulary. *Language Learning & Technology*, *23*(1), 87–113.
    https://doi.org/10125/44674

Sundqvist, P., & Sylvén, L., K. (2014). Language-related computer use: Focus on young L2 English learners in Sweden. *ReCALL, 26*(1), 3-20. https://doi.org/10.1017/S0958344013000232

Sundqvist, P., & Sylvén, L., K. (2016). *Extramural English in Teaching and Learning: From Theory and Research to Practice*. London, UK: Palgrave Macmillan.

Sundqvist, P., Wikström, P. (2015). Out-of-school digital gameplay and in-school L2 English vocabulary outcomes. *System, 51*, 65-76. https://doi.org/10.1016/j.system.2015.04.001

Swain, M. (1985). Communicative competence: some roles of comprehensible input and comprehensible output in its development. In S. M. Gass & C. Madden (Eds.), *Input in second language acquisition* (pp. 235-253). Rowley, MA: Newbury House

Swain, M. (1995). Three functions of output in second language learning. In G. Cook & B. Seidlhofer (Eds.), *Principles and practice in applied linguistics* (pp. 125-144). Oxford: Oxford University Press.

Ushioda, E., & Dörnyei, Z. (2012). Motivation. In S. M. Gass & A. Mackey (Eds.), *The Routledge handbook of second language acquisition* (pp. 396-408). New York: Routledge

Vygotsky, L. S. (1978). *Mind in society: Development of higher psychological process* (14th ed.). Cambridge, MA: Harvard University Press.

Wigfield, A. & Cambria, J. (2010). Students' achievement values, goal orientations, and interests: Definitions, development, and relations to achievement outcomes. *Developmental Review*, *30*(1), 1-35. https://doi.org/10.1016/j.dr.2009.12.001

Wigfield, A. & Wagner, A. L. (2005). Competence, motivation, and identity development during adolescence. In A. J. Elliot & C. S Dweck (Eds.), *Handbook of Motivation at School* (pp. 55-75). New York: Routledge