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Extramural English, with an emphasis on gaming, and Norwegian National test scores in English, 8th grade

A correlational study on the interactions between Extramural English activities and Norwegian National test scores

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Acknowledgements

The background for our thesis is our curiosity for Extramural English, more specifically digital gaming, and Norwegian National tests in English. Through the four years of studying English didactics, we have gained more knowledge on the area of second language acquisition, which we hope to employ when planning and teaching English as a second language. In addition, we hope our research is useful and will give a new perspective on the field.

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Abstract

In an increasingly globalized world, digital gaming has emerged, and learning English as a second language has changed towards being a language easily accessible in students out-of-school contexts. This thesis investigates if there are significant interactions between the participants extramural English language activities and the results on the NNT in English, 8th grade. English is a global language and functions as a lingua franca in entertainment such as gaming, streaming services and social media. In our research, data was collected from six 8th grade classes in Norwegian lower secondary schools through a quantitative research method, using a questionnaire and the results from the Norwegian National test in English, 8th grade. The questionnaire contains information about the participants background, gaming, and media habits and was linked to the participants results on the Norwegian National test in English. All analyses were computed using the software platform IBM SPSS statistics 28 and are presented through descriptive and inferential statistics. Significant interactions were found between extramural English language activities and the score of level on Norwegian National test in English 8th grade. Significant interactions were also found when dividing the group in gender. Tendencies show that a majority of the participants meet English content through extramural activities. Gender group differences were also found but vary in forms of what extramural activity the students engage in, in addition to differences to the extent they meet input, use/produce output and interact in L2.

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1 Introduction

This MA thesis taps into the fields of second language acquisition, digital gaming and Norwegian National tests in English. Furthermore, our aim is to shed light on the correlation between English extramural activities and the Norwegian National tests in English, 8th grade. Firstly, the aim of our thesis is to investigate if there are significant interactions between extramural activities and the Norwegian National test score in English, 8th grade. Secondly, we want to investigate if there are any correlations between the students' media habits and their Norwegian National test scores. Thirdly, our aim is to investigate if there are any tendencies of 8th graders extramural media habits. Finally, we seek to examine if there are gender group differences related to the students' extramural media habits.

A former student of ours[1], who improved his English skills from 8th to 10th grade, believed he improved his L2 proficiency in English due to his connection and interaction in English with his friend who he met through gaming. Therefore, we seek to examine the impact of extramural gaming on students' proficiency in English. In addition, we seek to examine if there are any tendencies of 8th graders extramural media habits, and if there are any gender group differences related to the students' extramural media habits.

1.1 Aims and scope

In our MA thesis we have used a quantitative research method conducting a digital survey, followed by a statistical bivariate analysis. We used data that is already available through the Norwegian National tests conducted by the Ministry of Education and Research, in addition to collecting our own data using a questionnaire. Our research design, based on our choice of research question and hypotheses, is therefore descriptive, more specifically, a hypothetical deductive method. The study is a cross-sectional study put forward on lower secondary schools in Troms in December 2021 - January 2022. The selection consists of 45 students in 8th grade. The preparations and the implementation of the data material was done by 8th grade English teachers, to insure anonymity of the informants. The questionnaire was conducted after the students had taken the National test in English. We used a multi-item scale conducted in *Nettskjema*. The questionnaire contained check options for gender, age, and language spoken

[1] The student has given an oral consent to publish this anecdote

at home, while the rest of the questions contained close-ended items with five or six response options.

1.2 Background

In an increasingly globalized world, there is reason to believe that digital gaming has emerged through an outbreak of digital technology over the last two decades. Learning English as a second language has developed from being a language students mostly learned at school or by reading books, towards being a language that is easily accessible in students out-of-school contexts (Sundqvist, 2009, 2015). In earlier years, English was referred to as a foreign language. Today, English is a global language, also referred to as a second language, and is often used as a lingua franca [2]in entertainment and social media by young Norwegians (Brevik, 2016; Rindal, 2013; Sundqvist, 2009, p.27-29). Sundqvist (2009) proposes the term *Extramural English* (EE) when referring to English used outside the classroom, voluntarily. In this paper we focus on the EE activities digital gaming, social media use, streaming, and reading in English. There have been several studies on extramural activities or outside-of-school activities and vocabulary proficiency in the second language (henceforth L2) (Lamvik, 2020; Sundqvist, 2009, 2019; Sylvén & Sundqvist, 2012, 2014; Sundqvist & Wikström, 2015), but our study wants to investigate further EE activities to Norwegian National tests in English.

In a study by Brevik (2016) boys read better in their L2 than in their L1. The first language that a child learns is often referred to as their L1, and the second language learned is commonly referred to as L2 (Gass et al., 2013, p. 4). In contrast, Bernhardt (2011) said that readers who struggle in their first language will most probably struggle in their second. Further, a study by Sletten et al. (2015) found a positive link between online gaming and English grades. According to a study by Sundqvist and Wikström (2015) gameplay correlates with vocabulary outcomes for the boys, but not for the girls. Furthermore, Sundqvist and Wikström (2015) found that gamers who played more than five hours per week used more complex English words in a national writing test than non-gamers. In the two latter studies, the majority of gamers were boys and had a link between students' personal purposes and English proficiency. Therefore,

[2] "A lingua franca is a language used for communication between peoplewhose first languages differ" (Holmes & Wilson, 2017, p. 87)

we seek to examine whether Extramural English could have a significant interaction with the results on the Norwegian National tests in English, 8th grade. Kuppens (2010) found a significant gender difference in the types of media used. A positive correlation between oral translation skills and playing computer games. The correlation is not very strong due to no distinction between different types of games. Moreover, Sylven and Sundqvist (2012) found empirical evidence that L2 English proficiency correlates with the frequency of gaming and type of games played. In addition, Sundqvist (2019) found that time used on gaming and interaction has more effect on students L2 proficiency than type of game. There is not much theory and research on the field of gaming when it comes to types of games, categorization of games and the connection to their English proficiency.

The findings mentioned above are relevant for the present study in order to be more enlightened on the field of L2 proficiency and students' extramural English habits. These four second language acquisition concepts will be covered: *input*, *output*, *interaction,* and *willingness to communicate*. *Input* is the language available to learners, *output* is the language learners produce, *interaction* is when the learners conversate in L2 (Gass et.al, 2013), and *willingness to communicate* is the learner's free choice to speak or remain silent in L2 (MacIntyre et al., 1998). We refer to *input* as both written and audio-visual English which students meet through media and internet-related activities (Krashen, 1985). Second language acquisition requires meaningful interaction in the *target language,* therefore comprehensible input is necessary for students' production of *output* and *interaction* in their L2 (Krashen, 1985; Long, 1981; Swain; 1985). *Target language* is the language being learned (Gass et al., 2013, p. 531). Students' choice of producing output and interacting with others in the target language has been found to be influenced by their willingness to communicate; their readiness to communicate with a specific person or persons using their L2 (MacIntyre et al., 1998, p. 547).

According to Sundqvist (2009, p. 203-204) extramural English matters both on oral proficiency level and vocabulary. Sundqvist (2009, p.204) differs between activities where the learner uses *active* or *productive skills*, like playing video games, surfing the Internet and reading, and *passive* and *receptive activities* such as listening to music or watching a TV show.

Much of the research we use in our thesis is conducted in Sweden and mainly focuses on L2 vocabulary and proficiency tests (Sundqvist, 2009, 2012, 2019; Sundqvist & Sylvén, 2012, 2014; Sundqvist & Wikström, 2015). Relevant research we use in our thesis from Norway is conducted in upper secondary school (Brevik 2016, 2019; Rindal, 2013; Sletten et al. 2015).

Sweden can be compared to Norway in language, the school system and access to English input. Therefore, we find these studies relevant and want to investigate these further but from a Norwegian perspective in lower secondary school and using a test already implemented in the Norwegian school system, Norwegian National tests in English. The research we have used is mainly based on vocabulary, while Norwegian National tests in English tests the students' reading competence, terms and expressions and grammar.

In Norway students are tested in 5th and 8th grade in English with National tests made by the Norwegian National Authority. These tests are meant to provide information on school quality for local government, as well as for school development (Norwegian Directorate for Education and Training, 2017). Analyses from Norwegian national tests 2021 show that boys and girls score more equal in English than in reading and numeracy (Norwegian Directorate for Education and Training, 2021c). In English, boys score one scale point higher than girls where the boys have 51 scale points and the girls 50 scale points on average. In reading, girls score two scale points higher than the boys where girls have 51 scale points and boys 49 scale points. In numeracy boys have 51 scale points and girls 48 scale points. This is interesting because analyses show that girls have higher grades than boys in the final exam and final grade in English after year 10 (Norwegian Directorate of Education and Training, 2019). Therefore, we seek to examine if there is a correlation between the pupils' score on Norwegian national tests in English and their extramural activities, with an emphasis on gaming.

Werler and Færevaag (2017, p.68) claim that there is a limited amount of research on the field National Tests in Norway whereas existing research is explaining the changes in test results over time. Since the national tests have two purposes, one to provide information on school quality and one for teachers to adapt their teaching, it may be that the research done is to provide information for only one of the purposes, hence school quality. According to a study by Sundqvist and Wikström (2015), the field requires more research on gaming and vocabulary in English language education. The study by Sundqvist & Wikström (2015) includes upper secondary school, therefore we stress the fact that more research on lower secondary school is necessary. Furthermore, a study by Gunnulfsen (2018) expresses the necessity of more research on the area of Norwegian National tests in English. As English teachers in lower secondary school we find these results interesting and seek to investigate if extramural English language activities correlate with the results on the National tests in English.

1.3 Research questions and hypotheses

Our thesis investigates if there is a correlation between extramural English activities and Norwegian National tests in English 8th grade. Therefore, our research questions and hypotheses are:

RQ1: Are there significant interactions between extramural English language activities and the score of level in Norwegian National test in English 8th grade?

RQ2: What are the tendencies of 8th graders extramural English language media habits?

RQ3: Are there gender group differences related to the students' extramural media habits?

The following hypotheses will be tested:

H1: There will be significant positive correlations between students' extramural English language activities and their test score in Norwegian National tests in English 8th grade.

H2: There will be a significant positive correlation between gaming as extramural activity and National score test.

H3: Boys spend more time than girls on extramural gaming.

H4: Students who have a higher level of test score on Norwegian National tests in English interact in English as an extramural activity.

Former research on the area forms a basis for our research questions and hypotheses. Research on the area of L2 English and EE activities such as Sundqvist (2009) and Lamvik (2020) indicate a correlation between students' English language proficiency and their media habits and EE activities. Sundqvist (2019) concludes with gaming in the wild being clearly related to L2 English proficiency. She did not find clear evidence between type of games played, but time spent on gaming is found to predict L2 vocabulary. It will be interesting to see if there are correlations between students' use of EE activities and the results on the Norwegian National test in English, and this is the assertion behind **H1** and **H2**.

Furthermore, our assertion behind **H3** is built upon former research on the field of gender differences in gaming. Borgonovi (2016) indicates that there is a significant higher probability that boys spend time on gaming than girls. Furthermore, Sundqvist and Sylvén (2014, p.15) found in their research that there was a statistically significant difference between gender and

time spent on extramural English, whereas boys were more likely to engage in such activity as young as 10-11 years old. A study by Sletten et al. (2015, p.340) also shows that boys spend more time on gaming than girls. In addition, a larger proportion of boys have access to gaming consoles than girls (Norwegian Media Authority, 2020, p.15-16).

H4 postulates that output and interaction induce learners' proficiency level in L2. Gaming as an extramural activity and interacting when gaming is predicted to have an impact on students L2 proficiency. Brevik (2016) suggest that online gaming makes adolescents better English readers, but further states that her findings need to be interpreted with caution. Her findings suggest that gamers who read instructions as well as communicate orally and by writing are proficient English readers, but she suggests further research on the area on if gaming improves English proficiency.

1.4 Limitations

There are some limitations to this study. We had to take into consideration access to informants due limitations to covid-19. As a consequence, a lot of informants and their English teachers had periods of absence during the time set to collect the data material. Teachers' workloads were higher than normal, which could be a reason the data collection took more time than foreseen. In addition, the student's absence led to fewer informants than predicted. Combined, this gave us a challenge with recruiting teachers to the study. As discussed in Sundqvist (2019) time spent on gaming is found to predict L2 vocabulary in a higher degree than types of games. However, we would like to investigate if time spent on gaming in addition to interaction and communication in English is a significant factor in the students test scores on the Norwegian National test in English. In comparison to other researchers on the field, we have used a test tool that is already implemented and mandatory in the Norwegian school, instead of using the Oxford Proficiency Test (OPT). It is beyond our scope to investigate how the English classroom effects the students L2 level on the national tests, but we would like to focus on which type of extramural activity correlates with the students' score on the National test in English.

1.5 The structure of the thesis

Our MA thesis consists of six main parts: Introduction, theoretical background and former research on the area, methodology, data analysis and results, discussion, and lastly, conclusion.

Firstly, in chapter 1 is the introduction. The introduction presents the background of the thesis, the research questions and hypotheses, scope and limitations and the structure of the thesis. Secondly, chapter 2 presents our theoretical background and former research on the area and contains four main sections. The first section presents a theoretical frame on second language acquisition, and then moves over to language development, English language extramural media habits, gender differences, and last, the Norwegian Education act and the new subject curriculum. Chapter 3 presents the methodology used in the research. Chapter 4 introduces the data analysis with findings, first the descriptive, then the inferential statistics. In chapter 5 we discuss our findings in light of former research and relevant theory, in addition to pedagogical implications, methodological limitations and weaknesses, and suggestions for further research. The conclusion is in chapter 6.

2 Theoretical background and previous research

In this chapter we are to give an insight in former theories on second language acquisition (SLA) we find relevant for our study. To support our thesis, we will provide a theoretical framework based on how second language acquisition can provide more information for teachers to be aware of when teaching students in L2. As mentioned in the introduction, English is used as a language of communication in entertainment and social media (Brevik, 2016; Rindal, 2013; Sunqvist 2009a, p.27-29) and will in our thesis be the significant *input* students meet outside of school. When students produce English by speaking or writing, this is what we refer to as *output.* When speaking and/or writing with others in their L2 we talk about the term *interaction*. How and when students choose to interact in their second language is based on students' *willingness to communicate,* which may give us knowledge on their proficiency in L2 English.

2.1 Second language acquisition

Second language acquisition is the study of how second languages are learned (Gass et al., 2013, p. 1). When using the term second language acquisition in our study we will investigate how learners develop their language skills (here: reading, listening, speaking, and writing) through extramural English. Although there has been done research on the area of second language acquisition in upper secondary education for years (Brevik, 2016, 2019; Rindal, 2013; Sylvén & Sundqvist, 2012; Sundqvist & Wikström 2014, 2015), there is still a necessity of research on the area of the effects of extramural English on Second Language acquisition in secondary school (Brevik, 2016; Sundqvist 2019, Sundqvist & Sylvén, 2012). Krashen (1982, p.10) differed between the terms learning and acquisition, whereas learning is instructed and explicit, and acquisition is more similar to how one acquire a first language, L1. However, we will refer to second language acquisition as the process of learning a second language (Gass et al., 2013, p.4), and as Sundqvist (2009), we will use the two terms interchangeably.

Words are the building blocks in our language, both orally and in writing. To understand a word, you have to understand the meaning of the word, hence in context with other words. It is not necessary to understand all the words in a sentence or a text to understand the meaning or the message of the text (Harley, 2017, p. 129). Therefore, a great vocabulary is not the only element necessary, you also need knowledge on how to use these words in a certain order for it

to give meaning, and to be able to use syntactic rules for the given language (Harley, 2017, p. 3). According to Chomsky, language learning involves the implementation of words. Further he points out the necessity of having vocabulary knowledge and development in addition to a combination of implementation of words and grammar/syntax. Chomsky also stresses the fact that children need to hear negative evidence, in addition to input, however, they do not hear negative evidence, arguably they must be born with an innate *language acquisition device*, or *LAD* (Harley, 2017, p.63).

Second language acquisition often takes place in a classroom, and in an artificial setting, and according to Long (1998, p.35) there are three methods of language teaching; first, the language becomes the object of teaching (focus on formS), second, the language becomes the medium of communication when teaching (focus on meaning), and last, a mix of both, namely *focus on form* (Long, 1998, p.41).

Firstly, focus on formS is heavily teacher instructed, with external syllabuses, and tend to create boring lessons as it focuses explicitly on grammar rules, memorization, and little communicative use. Secondly, in focus on meaning the language becomes the medium, instead of object of teaching, as is in focus on formS. However, Long (1998) argues that this is less effective since comprehensible input (see section 2.1.1) is not sufficient to acquire a second language, and some instruction to guide the learners attention towards certain aspects of the targeted language (Long, 1998). Lastly, focus on form is, a mix of the two previous, and according to Long (1998, p.40-41) the implementation of new words, hence grammatical shapes, is based on the student's or learner's internal syllabus. Focus on form stresses the fact that language should be taught in context, and ought to be learner-centered. The students have the best progression when they learn in their own pace, and in context, and not in an order predetermined by the syllabus or the teacher (Long, 1998, p.41). This is relevant when a student has the need for a certain knowledge, for example to advance in a game, he or she would acquire it when ready. In addition, it is important to mention that a student learn new words and grammatical shapes better when learned in a context and not isolated. According to Rindal (2013), her study shows that speaking English is a social practice for adolescent learners. She acknowledges social aspects of language use and encourage educators to take these into account when developing curricula and instructional design.

2.1.1 Comprehensible input and intake

According to Gass et al. (2013, p. 339) input is the language to which L2 learners are exposed. Input can be defined as the language data which the learner is exposed to, i.e., listening and reading (Zhang, 2009). In addition, input refers to what is available to the learner (Gass et al., 2013, p. 340) and will in our thesis be the English our participants meet through their extramural media habits, such as when gaming, using social media or streaming services.

Input is all the exposure to the target language that surrounds us. Input is important to second language acquisition, because without it there can be no output. If you do not see or hear the language, it is difficult to learn it, and therefore input is important for second language development. For a student to learn English as a second language, it is important for him or her to be exposed to input. As mentioned in the introduction, students meet English outside of school through extramural activities and early receive input in forms of listening and reading. Since the extramural activity digital gaming has emerged, many children receive input through gaming. Research on the area conducted in 26 countries by Borgonovi (2016) found that boys spend more time on gaming than girls. There is a lot of input in gaming in form of written texts, where the player is to solve a given task, or by getting input from other players orally or in writing. A study by Sundqvist and Wikström (2015) found that this gives boys an advantage in language learning and in tests in school. In addition, a study by Sundqvist and Sylvèn (2014) states that students who play computer games increase their vocabulary by searching for English words online to advance in a game. Further, students interact between borders and therefore communicate in English. Role-playing games like World of Warcraft is within this category. Therefore, boys accomplish a richer vocabulary than girls due to girls often choosing games of social character (Sundqvist & Sylvén, 2014, p. 15).

Although all types of input are beneficial for a student learning L2, and input slightly above the learner's current level can facilitate language development. For the input to be comprehensible for the learner we can talk about *intake*. According to Corder (1967) input refers to what is available for the learner, whereas intake refers to what is *taken in* or internalized. For input to become intake, the target language should be comprehensible for the learner. Relating this to our thesis, when students receive input in forms of e.g. gaming, for a student to advance in a game, the input has to be comprehensible. Further, the input must become intake for it to be integrated into the current learner-language system (Gass et al., 2013, p. 340).

However, Krashen (1985, p. 81) claims that comprehensible input is not enough, the learner "needs to be *open* to the input". Furthermore, in his article, Krashen (1985, p.81) puts forward the "affective filter hypothesis" which indicates "a mental block" that stops the input from reaching the LAD (language acquisition device). The filter is up when the learner is "unmotivated, lacks self-confidence, or is anxious" (Stevick, 1976 in Krashen, 1985, p.81), arguably this may occur in language class. However, when the filter is down or low, the learner is not anxious about failing, or forgets that he or she reads or listens to a message in a foreign language (Krashen, 1985, p.81-82). Relating this to the area in our thesis, when the learner is gaming, there may be a lot of accessible input, however in a different setting than in language class. One may suggest that this could make the learner's affective filter low, or completely down. Furthermore, language classes may be more effective when there is no or little access to the target language (Krashen, 1985, p. 92). However, there is a great accessible amount of input of English in Norway, and the area of gaming is one of them, in addition to streaming services, social media, music, and so on, thus making language class less effective for some learners. Even though the learner has a great amount of accessible input, it does not automatically mean that they are willing to use it, or even able to use it (Reinders & Wattana, 2011, p. 7).

Smith (1990) proposed the noticing hypothesis saying input does not become intake for language learning unless it is noticed. Noticing is the awareness, through attention, and is necessary for learning to become acquisition (Gass et al. 2013, p. 265). The role of noticing has been debated and centers around the question of what and how much attention is necessary (Robinson, 1995, 2003). Despite the debate, noticing is important for input to become output, and the student has to pay attention to it.

2.1.2 Output

Output is the language the students produce, i.e., speaking and writing. In our study, output is produced when students speak and write using the target language in extramural activities such as gaming and social media.

Gass et al. (2013, p. 356) says that when it comes to output, the learner is forced to put the words into some order and Swain (1985, p. 249) says that production "may force the learner to move from semantic processing to syntactic processing". In 1985, Swain introduced the notion of comprehensible output, also referred to as the output hypothesis (p. 249). By this concept she meant that learners are pushed in their production as a necessary part of making themselves understood, by modifying or trying out forms they had not used before. Through language

production stages the learner realizes what they know and what they do not know and is by Swain referred to as the *gap* in the language learning. When realizing this *gap*, the learner is pushed in modifying their output (Swain, 1985).

Gass et al. (2013, p. 359) mentions the importance of feedback being a source of information for learners. Providing the learner with information on their success, or lack of success of their utterances, feedback gives the learner opportunities to focus on production and comprehension. To improve their output skills, it is necessary with feedback, e.g., the EE activity gaming gives feedback directly in forms of written text, audio, tasks to encourage them to continue, or get feedback when interacting with co-players in L2. In the classroom students give feedback to each other or receive feedback from the teacher, but the students are not necessarily ready for it. In some cases, students are afraid to produce output in the classroom because they are afraid of getting feedback from the teacher or co-students, as to some argue the feeling of humiliation (Gass et al., 2013, p. 359). Still, to improve output, feedback is necessary in which it provides the learner with information on how to improve their language comprehension and proficiency level, or how to advance in a game.

A broader concept of feedback is *negotiation of meaning.* In a conversation, when the learners do not understand each other, the learners often start questioning each other's utterances. When this happens, Gass et al. (2013, p. 349) says the flow of the conversation is interrupted and the learners start negotiating what was not understood. Negotiation is a type of negative evidence received, and important since it enables the learners to search for additional evidence for change (Gass et al., 2013, p. 361). Therefore, communication with other participants through interaction is important to aid the learner(s) in understanding.

2.1.3 Interaction

The meaning of *interaction* in Cambridge dictionary is "an occasion when two or more people or things communicate with or react to each other" (Interaction, n.d). Interaction has had an important role in SLA theory, and forms the idea of conversational interaction in L2 according to Long's (1996, p. 451-452) interaction hypothesis:

negotiating for meaning, and especially negotiation work that triggers international adjustments by the NS or more competent interlocutor, facilitates acquisition because it connects input, internal learner capacities, particularly selective attention, and output in productive ways.

The interaction hypothesis states that the most effective method of learning a new language is through conversational interaction. Learning may take place during the interaction or may take place after being made aware (negotiation) of the problem by listening to or searching for more input (Gass et al., 2013, p. 378). Interaction research, according to Gass (2003) express that language learning examines the relationship between communication, acquisition and the mechanisms e.g., noticing and attention. The interaction approach is language learning by receiving input, producing output, and getting feedback through interaction (Gass et al., 2013, p. 348). Producing output in interaction with other learners promotes language learning, where learners also learn by their co-learners by being corrected, indirectly and directly. Mackey et al. (2012, p. 8) state: "The interactionist approach posits that the interactional *work* that occurs when a learner and his/her interlocutor (whether a native speaker or more proficient learner) encounter some kind of communication breakdown is beneficial for L2 development". Connections have been made between those who use English in interaction with others in forms of extramural activities (Brevik, 2016, 2019).

2.1.4 Willingness to communicate

According to Reinders and Wattana (2011, p. 6-7) the benefits of games, such as lowering affective barriers and encouraging learners to interact in a second language, have been claimed by many. With decades of research saying the exposure of second language input affects SLA, this do not necessarily mean the learner are willing or able to interact in the target language. *Willingness to communicate* (WTC) is according to MacIntyre et al. (1998) the student's free choice of willingness to speak or to remain silent in L2. According to Kang (2005) WTC arises from the role of interaction and has been an important concept in explaining second language acquisition from a linguistic perspective as said by Long (1996) and Swain (1985). Further, Kang (2005) discuss that WTC can contribute to second language acquisition and plays an important factor in second language pedagogy, but through the role of situational variables or as MacIntyre et al. (1998) call situational influences. Defined as "readiness to enter into the discourse at a particular time with a specific person or persons, using a L2 [Second language]" (MacIntyre et al., 1998, p. 547). In secondary school students' willingness to communicate in a second language classroom plays an important factor on their proficiency level (Kang, 2005). Some students seek, while others avoid communicating in a second language. In a classroom there are different variables influencing the student's willingness to communicate and students who use the target language regularly both outside and in school, have a higher probability on learning how to communicate in specific situations and advancing their proficiency level.

MacIntyre et al. (1998) layered pyramid model illustrates the different variables influencing second language learners' eventual second language use.

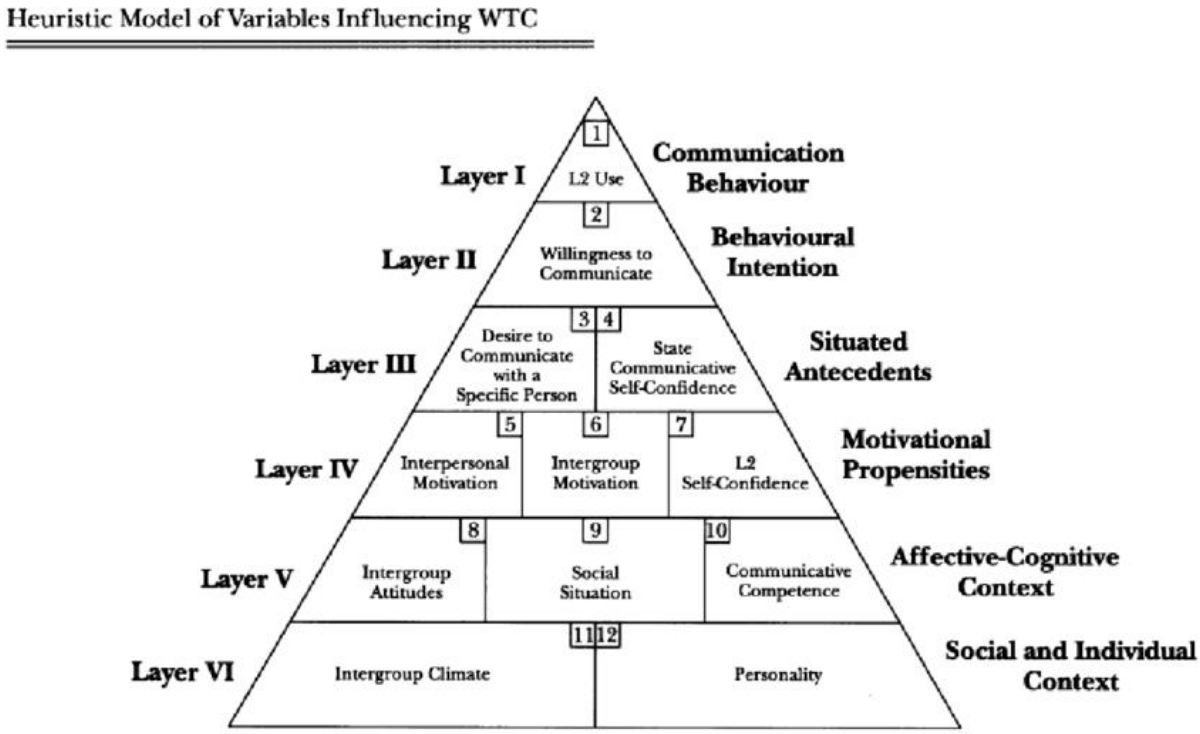

Figure 1 Heuristic Model of Variabels Influencing Willingness to communicate (MacIntyre et al., 1998, p. 547).

A range of different variables influence the second language learners' use of the second language according to MacIntyre et al. (1998) (see figure 1). The pyramid is illustrated with six layers (I, II, III, IV, V, VI) where Layers I, II and III are situational influences and Layers IV, V and VI are enduring influences. Moving up the layered pyramid will give the learner more control over his or her communicative skills in L2. While games are considered by learners as *fun* and engaging these are seen to affect some aspects of the above variables influencing learners second language willingness to communicate (Reinders & Wattana, 2011, p. 8). When more willing to communicate, the learner have been found to have more potential to practice (MacIntyre et al. 2001). Relating this to our thesis, students who engage in extramural activities are predicted to have more willingness to communicate in L2. Moreover, students who are

gaming as an EE activity is predicted to have a higher willingness to communicate in L2 since they use English when gaming as a free choice and/or to advance in a game.

2.2 Psychology of language

As mentioned earlier, input, output and interaction are important for language learning, but there are also other matters to consider, e.g., working memory, and nonlanguage influences such as aptitude, motivation, and attitude. Gass et al. (2013, p.267) defines working memory as "the structures and processes that humans use to store and manipulate information", while short-term-memory deals with the storage of information. The working memory can be divided into three (or even four) parts: the articulatory/phonological loop, the visuospatial sketch pad, and the central executive, the last being the controller of the two previous and helps focusing and switching the attention to the task. The articulatory/phonological loop stores phonological information which is maintained by e.g., repeating words, while the visuospatial sketch pad stores visual and spatial information (Baddeley & Logie, 1999; Gass et al, 2013) The capacity of the working memory may differ from one human being to another, which again could be a factor when it comes to language learning by helping the learner to balance between the language tasks. In addition, some studies show that there is a relationship between phonological short-term-memory and vocabulary and syntax in L2 learning (Gass et al., 2013, p. 268, 269).

As mentioned previously, nonlanguage can also influence the learner's success in second language acquisition. The age of the learner, aptitude, motivation, affect, attitude and family background (socioeconomic) are all factors that play a part in language learning, and they may also correlate with each other (Gass et al, 2013, p.431). We have already dealt with the critical period hypothesis, so this will not be mentioned any further. *Aptitude* or *language aptitude* can be referred to as the learner's potential to acquire new knowledge, here, a new language, and is the strongest predictor of success. Studies have shown that there is a correlation between aptitude and family background (Gass et al, 2013, p.444, 453). Roe (2020, p. 108) stresses the fact that socioeconomic background will influence the learners learning potential. *Motivation* is another factor that plays an important part in language learning, however what triggers the motivation can differ, e.g., to achieve a good grade, or a job, even an inspiring teacher could create motivation in the learner (Gass et al, 2013). A fourth factor is *affect*, which is closely connected to Krashen's affective filter hypothesis. Gass et al. (2013, p.259) defines affect in language learning as "feelings or emotional reactions about the language, about the people who

speak that language, about the culture where that language is spoken, or about the language-learning environment". Affect includes both language and cultural shock and anxiety, in addition to social distance. TThese are all factors that may influence the correlations in our study, however, we will not investigate these further.

2.3 Language development

There are around 5000-6000 languages in the world, and, when speaking or writing, we must follow some basic syntactic rules in a language (syntax), in addition to knowing the words (lexicon) of the language, to be able to negotiate meanings (Harley, 2017, p.3, 6). However, the syntactic rules, word order, sounds, etc. differ between languages. Some languages are clearly related to each other, like Norwegian and Swedish, while other languages are more different, both in words, syntactic rules, or even letters/signs in the written language (Harley, 2017).

Language skills undergo development the entire life of a human being, but it reaches its peek from 18 months old to early childhood (Harley, 2017, p.57). Henceforth, to learn a second language you should start as early as possible, according to the *critical period hypothesis*. The critical period is discussed to last until five years old or up to early youth and helps the learner to be more fluent in a language, especially when it comes to syntactics of a language, and the accent (Gass et al, 2013, p. 434; Harley, 2017, p.68-73). In Norway the students start their English education in year 1 (5-6 years old) (Thomas & Breidlid, 2015), though they only have one lesson a week.

Since the second world war the use of English has gradually increased on all areas, as it became a compulsory subject in Norwegian schools from the 1960s. From being a foreign language, it has now grown to be a language that students learn at school from day one and they develop literacy skills in both English and Norwegian at the same time. In addition, Norway ranks as one of the top nations when it comes to English proficiency (Graedler, 2014, p. 292). Taking this into account, how students learn English as a second language has changed during the last decades, where the digital world has had its entrance and students surrounds themselves with English. Our informants, who are 8th graders at the age of 13-14, have been born into a technological era where using digital instruments is a part of their everyday life. Using smartphones, tablets, PC's etc., comes naturally and this generation have a lot of competence on the area.

2.3.1 Reading development

Koda (2007) states that the "ultimate goal of reading is to construct text meaning based on visually encoded information. Essentially, it entails converting print into language and then to the message intended by the author" (p. 1). Furthermore, Koda (2007, p. 1) claims that reading is built upon an oral language competence, and it is essential for the reader to be able to make the links between this oral language, and the writing system.

According to the Norwegian Directorate of Education and Training (2012), reading is one of the five basic skills mentioned in framework for basic skills. It is defined as the ability to create meaning from a text, and to give "insight in other people's experiences, opinion, and knowledge, independent of time and place" (Norwegian Directorate of Education and Training, 2012, p. 8). Furthermore, several sub-categories are included in reading as a basic skill, and as developed readers the students should be able to understand, find, interpret, and reflect and assess upon texts. To become a better reader the necessity of using the correct reading strategies to task is stressed (Norwegian Directorate of Education and Training, 2012). There are also other important factors to bear in mind on what influence a student's reading competence, but an increased reading engagement could potentially compensate for other factors such as socioeconomic background (Roe, 2020).

Reading in L1 and L2 differs somewhat. The main difference is that when the learner starts reading in an L1 he/she already knows approximately 5000-8000 words orally (research done with English as L1), in addition to knowledge about the morphology and syntax of their language, and implicit knowledge about the structure of stories and genres (Grabe, 2008, p. 130-131). This is clearly an advantage that most beginners of L2 reading do not have since most readers start reading in L2 simultaneously as they start learning the language. Moreover, the L1 will influence the L2 reader and help them in the reading process, but may also hinder them by interfering, often depending on the difference or similarities between the two languages (Grabe, 2008, p.131).

Bernhardt (2011, p.38) suggests that if a reader struggles in L1, it is likely that the reader will struggle in the L2 as well. However, Brevik (2016) claims that it is possible to be a poor reader in L1 and good reader in L2, especially since reading takes place in a sociocultural environment. The participants in her study often encountered English in an out-of-school context, engaging in media-related activities, such as gaming, TV-series, reading news in English and listening to English lyrics. Henceforth, since their preferred out-of-school language is English, they are

exposed to more English vocabulary, which could make them more fluent readers in their L2 than their L1. In addition, their motivation for learning English was based on a wish to improve their gaming skills, or to advance in a game. This will be discussed further in section 2.2.3.

Brevik (2019, p.603-604) suggests that books enhance vocabulary, in addition to a deep lasting interest in text. Moreover, she claims that reading in social media may extend to school texts and could explain why some of the participants in her study were proficient in L2 reading. In addition, she found that the gamers in her study read voluntarily both printed novels in addition to reading in games.

2.3.2 Gaming and language development

For decades, games have been discussed in second language learning and was by Wright et al. (1984, p. 1) viewed to have a central part to a teacher's repertoire in the classroom, if accepted that games can provide intense and meaningful practice of language. Over the last two decades digital games have increased, both for educational purposes and entertainment (Reinders, 2012; Thorne et al., 2009). We refer to *gaming* as playing video games on a personal computer (PC) or by using consoles playing e.g., PlayStation or X-box. Considering the importance of gaming for many adolescents today, there are little research on the area of type of games related to this specific learner group (Sundqvist, 2019). We are not going to immerse our self into the area of the effect or relevance of type of games in SLA learning when it comes to gaming but will give a brief summary of type of genres and relevant terminology used in our study.

Massively multiplayer online games (MMOG) (Zheng et al., 2015) and massively multiplayer online role-playing games (MMORPG) have gained attention among second language acquisition researchers (Bytheway, 2011: Rankin et al., 2009; Thorne et al., 2009). Sundqvist (2009, p. 118) found that boys preferred playing MMORPG while girls opted for offline single-player games such as The Sims. In the gaming universe there has been an enormous development in games, new games and in types of games. While The Sims was an offline single-player game in 2009, today it is also a MMORPG. In our survey we have included multiple categories whereas The Sims is listed in two categories: single player and multiplayer. While we distinguish between multi- and single-player games due to the focus of the interaction part and L2 learning between students, Dickey (2006) and Sylvén & Sundqvist (2012) state that even though characterizing or giving descriptions of types of digital games there is no consensus in the game design community. Moreover, Kuppens (2010) found a positive correlation between oral translation skills and playing computer games, though not very strong

since she did not make any distinctions between the different type of games. Kinzie and Joseph (2008, p. 647-648) have divided game play activities into six different modes: *Active play*, *Explorative play*, *Problem-solving play*, *Strategic play*, *Social play* and *Creative play*. These modes may occur at different stages of the same game, and it is therefore not applicable for our research when it comes to categorizing type of games. However, when it comes to preferred mode and gender, according to the research of Kinzie and Joseph (2008, p. 658), boys are more likely to choose games that offer *Active* and *Strategic play* mode, whilst girls are more likely to prefer games with *Creative play* mode.

In the *Problem-solving play* mode, the player engages in activities such as puzzles, and other challenges, and where there is a well-defined problem to be solved (Kinzie & Joseph, 2008, p.648). This is the mode that concurs the most to the tasks given in the Norwegian National tests in English. One aspect of the test is to find, understand and use information, given for example by clicking on the right picture, or dragging it to the right place. Unlike games, the students do not get a reward if they manage the task, making it impossible to know whether they solved the task or not, nor do they advance in level.

Relating this back to the area of L2 learning and the students' proficiency, several studies have found a link between students' use of gaming as an extramural activity and their proficiency level in English (Lamvik, 2020; Sundqvist, 2009, 2019; Sundqvist & Sylven, 2012, 2014; Sundqvist & Wikström, 2015). In addition, studies found that time spent on gaming (Sundqvist, 2019), willingness to communicate through games and interaction (Reinders & Wattana, 2012) and gender difference in favor of play modes (Kinzie & Joseph, 2008) are relevant, but also more research on the area is necessary. We further relate this to our research questions and hypotheses on the field of gaming and L2 proficiency in English, to investigate if there are links between 8th graders extramural media habits and their use of English.

2.4 English language extramural media habits

Students today have a lot of authentic English input through social media, streaming services and gaming. When using extramural English through social media, streaming services and gaming students are exposed to input, output and interaction. In this section we will provide information on the key concepts of extramural media habits relevant for our study: social media, streaming services and gaming.

2.4.1 Social media

Social media is an internet-based form of communication where people can e.g., share information, create web content, post pictures and comments and have conversations through social media platforms. In our questionnaire, we focus on the social media platforms Snapchat, Instagram, Facebook and Tik Tok which also the Norwegian Media Authority have used in their inquiry (Norwegian Media Authority, 2020). According to the Norwegian Media Authority (2020, p. 16) 99 % of the girls and 100 % of the boys in the age group 13-14 years old answered that they have their own mobile phone. 97 % of the girls and 96 % of the boys report using Snapchat, while 97 % of the girls and 99 % of the boys report using YouTube. Using Instagram, YouTube, Tik Tok and Facebook varies from 68 % to 85 % when looking at both genders (Norwegian Media Authority, 2020, p. 22). Social media is today a form of communication for 13-14 years old children, where they not only communicate in Norwegian, but also in English due to the impact of English in Norway and the increase of digital technology.

2.4.2 Streaming services

Earlier, audio-visual input was mostly distributed on TV and DVDs. Now there are countless platforms where one could get access to these sorts of input, i.e., Netflix, YouTube, HBO, and other streaming services, which is accessible through mobile phones, laptops, etc. (Montero Perez, 2022). According to Bakken (2020, p. 24) the amount of teenagers (13-18 years old) watching TV has declined from 2015 till 2019, and the reason could be the increase in use of streaming services. By streaming services, we address platforms that mainly produces input, and where there is little or no possibility to comment or communicate with others. The Norwegian Media Authority (2020) has included YouTube as a social media in their study, however in our study, we include this in streaming services, since it mainly produces input. Lamvik (2020) has included YouTube as a streaming service in his study. Access to Norwegian language on streaming services is not as widespread as English (or French and Spanish) due to the number of speakers, which is also the case for social media and gaming (Schurz et al., 2022). In our questionnaire we include the streaming services YouTube, Netflix, HBO Max, Viaplay and Disney Plus.

2.4.3 Gaming

Gaming is the action of playing video games. In our study we focus on gaming using a PC or by using game consoles such as PlayStation or an Xbox. According to the Norwegian media

authority (2020, p. 95) 83% of the boys and 53% of the girls agree with the statement *Gaming improves my English skills.* Sundqvist and Wikström (2015) indicate that "gameplay correlates with vocabulary and gaming outcomes for the boys, but not for the girls" (p. 74). Additionally, Sylvén & Sundqvist (2012) found correlations between L2 English proficiency and frequency of gaming and type of games played. Therefore, we find it interesting to investigate what makes the difference in 8th graders extramural English habits, with an emphasis on gaming. Receiving input, producing output and interacting are concepts covered when gaming, but in different degrees based on what type of game is played, who they play with, in what language they communicate when gaming, and/or if they communicate when gaming. The concepts of input, output and interaction are in focus when investigating the thesis further and used in our data analysis when looking for significant interactions. Sundqvist (2019) uses the terms non-gamer (NG), single player (SP), multi-player (MP) and massively multiplayer online games (MMOG) when categorizing types of games, we have chosen to add massively multiplayer online role-playing games (MMORPG) and Offline single-player game (OSPG). In contrast, Borgonovi (2016) says that moderate gaming may be beneficial to students, while excessive gaming may not. Spending too much time on gaming may limit the students' opportunity to engage in other skills. Relating this to school, students who spend the majority of time gaming, to the extent that they miss out on other activities or subjects, may perform well in English, but not in other subjects (Sletten et al., 2015, p. 345-346).

2.4.3.1 Problem-based gaming

Problem-based gaming is according to Kiili (2007, p. 396), defined as a learning process which emphasizes the meaning of authentic learning tasks, experiential learning and collaboration. Further he states that a game itself is a big problem consisting of smaller problems (Kiili, 2005). The gamer plans a strategy in order to solve the problems and according to Kiili's (2007, p. 397) *Problem-based gaming model* the process of planning a strategy, testing the strategy and reflecting upon it is important for the player to advance in a game. Players may play isolated or through collaboration with other gamers. Kiili (2007) states that there is a divide between playing in a private or a shared world, however the process, the players' critical reflection occurs in their private world. On the other hand, *Problem-based learning* is "a student-centered learning approach helping learners to acquire and develop the knowledge, skills and capabilities needed to solve problems effectively" (Engel, 1997 in Kiili, 2007, p.396).

2.4.3.2 In-game communication

Norwegian is not a widespread language, such as English, therefore, when communicating with others, English often functions as a lingua franca (Holmes & Wilson, 2017, p. 86-88). The ability to communicate when gaming has become an essential part, especially in online gaming. Voice chat, where players communicate by speaking using headsets and microphones gives the gamers the opportunity to interact through collaboration and teamwork or by competing against each other or against other teams. Speaking and writing is the most common way of communicating when gaming and is the form of communication we refer to as output in our thesis. Still, to be able to produce output and to interact, receiving input through listening and reading is essential to advance in a game. The gamers produce output through interaction with other players when playing MMOGs and MMORPGs (Sundqvist, 2019). The gamers immediately receive feedback and/or response both to what they are communicating in English (output and interaction) but also on their actions in the game which is received through input (reading or listening) or interacting with other players on what to do. Therefore, we predict gamers to produce output, to interact and to have a higher willingness to communicate since speaking English when gaming is the student's free choice of willingness to speak or to remain silent in L2 (MacIntyre et al., 1998).

2.5 Gender differences

In the Official Norwegian Report (NOU 2019: 3) it is claimed that girls do better than boys in language subjects, in addition, their final grade and grade on the exam are better than the boys. In contrast, boys score one scale point over girls on NNT in English, 8th grade (Norwegian Directorate for Education and Training, 2021c), while analyses show that girls have higher grades than boys in the final exam and final grade in English after year 10 (Norwegian Directorate for Education and Training, 2019). According to the PISA-results from 2018, Norwegian boys' and girls' reading literacy is declining and there are still gender differences whereas girls score significantly higher than boys with a difference of 47 points. There is a change in reading habits where students say they spend less time reading as an extramural activity but spend more time looking at screens, and 50% of students report that they do not spend time on reading in their spare time. In accordance, 68% of the boys report that they only read if they have to, whilst 48 % of the girls report the same. Moreover, both genders spend more time on the Internet, social media, and gaming, however they do not regard these as

reading activities (Jensen et al., 2019). Kuppens (2010) found, in her research, that there was a significant gender difference in type of media used.

As mentioned earlier, 99 % of the girls between the age of 13 and 14 in Norway have their own mobile phone, whereas 100% of the boys in the same age group have their own mobile phone (Norwegian Media Authority, 2020, p. 16). Moreover, in the age group 13-14 years, 82% of the boys have access to a gaming console (connected to the TV), however only 24% of the girls. According to the Norwegian Media Authority (2020, p. 22), there are no major gender differences when it comes to social media overall, but some applications are more popular amongst one gender than the other, e.g., more girls in the age group 13-14 years use Tik Tok (68% vs 79%).

The number of boys receiving special education is currently higher than girls according to the Official Norwegian Report (NOU 2019:3). There are considerable gender differences in receiving special education. Approximately 70% of all decisions on special education in primary education applies boys (NOU 2019:3, p. 56). Several schools' exempt students with special education or with adapted language education from National tests (see section 2.6.3) A weakness with our research would be not having the results from these students.

2.6 The Education Act Norway and new English subject curriculum

According to the Official Norwegian Report (NOU 2019:23) important focus areas are that the goals and principles for the basic education in the new Education Act is to be the same, but the course leading to the goals will be different (NOU 2019:23, p. 19-20). Further, NOU 2019:23 says that the Education Act § 2-3 concerns the content in and the assessment of the students in primary education (NOU 2019:23, p. 196). The renewed curriculum with focus on the basic skills and formative assessment are to give teachers, principals, municipalities, and counties the possibility of finding the best course to follow.

In 2020 a new National curriculum was implemented with a reduction in the number of subject competence aims to allow for more in-depth learning. The new curricula in English focus on students' competence in reading, writing and oral communication (Ministry of Education and Research, 2019). The biggest adjustment is that instead of having two final grades in English, one in writing and one in oral, there is now only one final grade based on the students' final

competence. According to the Ministry of Education and Research (2019) the English subject aims to prepare the students for an education and societal and working life that requires English-language competence in reading, writing and oral communication. In addition, use English to learn, communicate and connect with others (Ministry of Education and Research, 2019).

2.6.1 Basic skills

With the Norwegian education reform of 2006 five basic skills were defined as fundamental for learning in all subjects and for the students to show his or her competence. The five basic skills are oral skills, reading, writing, digital skills, and numeracy (Norwegian Directorate for Education and Training, 2012). The new curriculum in Norway from 2020 has continued to focus on the importance of basic skills in all subjects, according to the framework from the Norwegian Directorate for Education and Training (2012, p. 2) based on white paper (Meld. St. 28 (2015-2016)). The English subject only have four basic skills presented: oral skills, reading, writing and digital skills. In the English subject the oral skill involves listening, speaking, and to converse. The ability to write involves expressing own ideas and opinions on paper, in text or digitally. To read is the ability to understand and reflect upon presented content. Digital skill is the ability to explore the digital world to strengthen language learning and to acquire more knowledge (Ministry of Education and Research, 2019, p. 3-4). NNT in English differs from NNT in reading and numeracy, since English is not defined a basic skill, but tests the students' competence in the subject English. It tests mainly reading comprehension, vocabulary, terms (expressions) and grammar (Norwegian Directorate for Education and Training, 2017).

2.6.2 Assessment

The basic skills are fundamental for learning in all subjects and a part of the students' social development and education, as well as a prerequisite for each student to show his or her competence. The basic skills are to be a part of the formative assessment in all subjects, and according to the Education Act § 3-10 the formative assessment shall contribute to learning, provide a basis for adaptive teaching, and contribute to increase the student's competence in the subject (Forskrift til opplæringslova, 2020 § 3-10). NOU 2019:3 (p. 209) says that all students in basic education have the right to receive formative- and summative assessment. All assessment given throughout the year forms the formative assessment, including tests, homework, term papers etc. Using the results from the Norwegian National test in English as a part of the formative assessment would be beneficial and could have an effect on the students' learning outcome, depending on how the assessment or feedback is given (Hattie, 2009, p. 174

in NOU 2019:3, p. 209). Today, the formative assessment depends on the teacher, and the school's practice. NNT in English may form a base for formative assessment, but this is up to each school to decide and yet practiced very differently from school to school. Analyses of the NNT in English give us numbers and measurements which report the students results in a national quality assessment system. However, the results are only used as a part of the formative assessment tool in a small degree (Norwegian Directorate for Education and Training, 2019).

The students only participate on NNT in English in 5th and 8th grade. Since they do not have NNT in English in 9th grade, as reading and numeracy, there is no basis for comparison. Furthermore, NOU 2019:3, also mentions gender differences and that girls and boys respond differently when it comes to formative and summative assessment. The boys are triggered by competition, and the possibility to win, while girls hesitate to participate in activities involving risks. Girls are more motivated by summative assessment and can experience a higher degree of stress through formative assessment when it comes to performing on tests and hand ins. Consequently, how girls and boys respond on the summative assessment will vary. The extent to which gender differences influence the formative assessment is important to be aware of by teachers (NOU 2019:3, p. 210). It is difficult to adapt teaching for both genders, due to the lack of concrete assessment tools in the English subject. More research on the field will help teachers and students with formative and summative assessment. Analyses on the field of National tests in Norway mostly exist of research explaining the changes in test results over time and according to Werler and Færevaag (2017, p. 68) there is a limited amount of research on the field. Moreover, the national tests have two purposes, to provide information on school quality and for teachers to adapt their teaching. However, Werler and Færevaag (2017, p. 78) question the purpose of the National tests in Norway, as they see it being reductive and decontextualised. This may lead up to teachers applying teaching-to-test-strategies instead of using the results from the test as a formative assessment. NOU 2014:7 (p. 105) states that the school owners and school leaders assess the National tests as useful tools. However, it is not as beneficial for pedagogical use since the test results do not provide the teachers with additional information regarding the students' level of competence. Moreover, Gunnulfsen (2018, p. 67) claim: "according to official regulations, teachers have to use the test results to improve learning outcomes even if the system is not able to deliver necessary data". Her findings implies that

teachers are somewhat illiterate when it comes to analyzing complex Item Response Theory[3] tests like NNTs (Gunnulfsen, 2018, p. 67).

2.6.3 English National test, 8th grade

In Norway, the students are tested in numeracy, reading in 5th, 8th and 9th grade, and in English in 5th and 8th grade. The Norwegian national tests' main purpose is to provide the school with knowledge about the students' level in reading, numeracy, and English. The information from the test results is supposed to be a part of the formative assessment and to ensure the quality of education (Norwegian Directorate for Education and Training, 2017). The Norwegian national tests set out to challenge and motivate both genders equally, and without any bias (Norwegian Directorate for Education and Training, 2017).

The Norwegian National test (NNT) in English, 8th grade tests the student's reading competence and are based on the competence aims in English after year 7. In contrast to the Norwegian national tests in reading and numeracy, the Norwegian national test in English does not test a specific basic skill. The tasks in NNT in English focus on testing reading competence, vocabulary and terms (expressions) and grammar (Norwegian Directorate for Education and Training, 2017). The test measures the extent to which students' competence in English correlates with the competence aims in English and includes the following aspects in 8th grade (Norwegian Directorate for Education and Training, 2017):

- Find, understand and use information
- Understand words, terms (expressions) and main content in texts of varied extent from different sources
- Understand and use a vocabulary and terms (expressions) which covers everyday situations
- Understand the meaning of words and expressions from the context used
- Understand and use basic patterns for spelling, word inflection, syntax and text structure
- Reflect upon content in texts

[3] Item Response Theory is used to compare changes over time on NNT since 2014 (Norwegian Directorate for Education and Training, 2017)

The tests are meant to provide the teacher with information about the students' levels, hence contribute to adapted education (Norwegian Directorate for Education and Training, 2017). The results are given by scale points and levels. The levels go from level 1 to level 5, with level 1 being the lowest level of achievement and level 5 being the highest level of achievements. The levels, as described in the teacher guide, are listed with progression. Demands on skills, such as the ability to reflect, analyze and judge its own work increase with the higher level of achievement (Norwegian Directorate for Education and Training, 2021a). Scale points are set to an average of 50 points on a national level. Scale points will be elaborated in chapter 3, section 3.3.3.

Every year the tests are analyzed, and the analysis of the National test is, according to the Norwegian Directorate for Education and Training (2017), meant to ensure development of the tests as a system, in addition to see changes over time. Analyses show that there is an increase in the students' level in English each year (Norwegian Directorate for Education and Training, 2021c). In addition, boys score one scale point over girls on NNT in English, 8th grade. This is in connection to previous years achievements (Norwegian Directorate for Education and Training, 2021c).

Some of the students who receive special education in English or have adapted language education can be exempted from participating on NNT in English as mentioned earlier. The decision is to be made by the school or the parents (Norwegian Directorate for Education and Training, 2021b). Table 1 shows that there has been an increase in the percentage of students who are exempted from NNT in English, 8th grade from 2015-2021 (Norwegian Directorate for Education and Training, 2021c, p. 7).

Students who are exempted from NNT in English, 8th grade, 2015-2021

	2015	2016	2017	2018	2019	2020	2021
Exemption in English	2,6 %	2,9 %	3,5 %	3,6 %	3,8 %	3,5 %	3,7 %

Table 1 Percentage of students exempted from NNT in English, 8th grade from 2015-2021

2.7 Theory- Summary

The foundation for this research is based on our theoretical background and previous research, and in this section we will give a brief summary of the main concepts presented in this chapter. The first part of this chapter presented the theoretical framework where we explained main concepts used in second language acquisition. Further, we presented how language and gaming have developed, the amount of authentic extramural input students meet, and provided information on the key concepts of extramural media habits relevant for our study. The second part of this chapter has been oriented towards the Education Act Norway and the new English subject curriculum, by presenting the relevance of basic skills, assessment and English National test in English, 8th grade in relevance to our study. In addition, this chapter has presented former and contemporary research on the area, in order to be more enlightened on the field. Finally, the results of this study in light of the theoretical framework and how to incorporate these findings into new areas of research is presented in chapter 5.

3 Methodology

In this chapter we intend to give a presentation of our methodology by describing and giving a justification of our scientifical theoretical perspective, the method and research design we chose, statistical instruments used, the participants in the study, validity and reliability and ethical issues. The methodology is determined by our research questions and hypotheses, and seek to gather useful information for our research.

Research questions:

RQ1: Are there significant interactions between extramural English language activities and the score of level in Norwegian National test in English 8th grade?

RQ2: What are the tendencies of 8th graders extramural English language media habits?

RQ3: Are there gender group differences related to the students' extramural media habits?

Hypotheses:

H1: There will be significant positive correlations between students' extramural English language activities and their test score in Norwegian National tests in English 8th grade.

H2: There will be a significant positive correlation between gaming as extramural activity and National score test.

H3: Boys spend more time than girls on extramural gaming.

H4: Students who have a higher level of test score on Norwegian National tests in English interact in English as an extramural activity.

3.1 Scientifical theoretical perspectives

We have made, by applying Crotty's (1998) model of four elements; epistemology, theoretical perspectives, methodology and methods a scientific argument for our research process. According to Crotty (1998), choosing a research method could be an indicator in the direction of the other three elements. Firstly, we want to use the results from the Norwegian National test in English and closer interpret if there are any correlational relationships between the students' (scale points) level on the test and time used on EE activities. Our intention is to explain/justify

the events rather than trying to understand them. According to Crotty's (1998) model the epistemology within our research would be objectivism whereas the theoretical perspective would be positivism and critical rationalism. The methodology is survey research including experimental research, for example hypothesis testing, and the method used is a questionnaire followed by a statistical analysis (Crotty, 1998). Lastly, we want to use causal explanations based on the hypotheses designed to find statistical contexts (correlation/significant interactions).

3.1.1 Our scientifical theoretical perspective

Our scientific theoretical perspective is based on positivism and critical rationalism. Positivism is all knowledge that positively allows testing and observation (Nyeng, 2012, p. 45). This theoretical perspective highlights that the objective truth can be tested objectively, meaning people and social systems can be studied empirically by using sense data. Instead of asking the students about their opinion on the National tests, we are conducting research which can be transformed to numbers through a survey. Our research prefers objective measurements unlike the subjective experience a qualitative design would prefer. Questioning the positivistic perception of reality by using causal explanations, is natural when studying people with subjective experiences. By using already existing knowledge, here: the knowledge on NNT in English, we are to build new insight on already existing knowledge from a positivistic view. By doing this, we can acquire valid knowledge to put forward in our future educational practice as English teachers. The alternative to positivism is an interpretative or constructivist approach. Constructivism contributes by interpreting and by trying to understand how people perceive a phenomenon. The disadvantage with a constructivist view could be that the participants being examined is not independent enough from the examiner (Gripsrud et al., 2016). Further, positivism implies that the role of the researcher is to be neutral, i.e., not to influence the research objects, but to stay on the outside and observe (Nyeng, 2012, p. 46).

Our survey was conducted by the participants English teachers and did not depend on us as researchers to conduct the survey. The survey is anonymous, giving the participants the opportunity to answer honestly. According to Nyeng (2012, p. 46), positivism perceives social sciences as science. In this matter we can discuss how generalizable our research is to be. Within the scientifical method critical rationalism, Popper (1934/1972) says it is about finding objective knowledge, further finding truths to be exposed/revealed. This is in accordance with Popper's theory on falsification (Popper, 1934/1972 in Kleven & Hjardemaal, 2018, p. 181).

The falsification principle is to derive empirical consequences from the hypothesis, where to make predictions on or to reject something. It is difficult to fully prove a theory, but the principle of falsification can say that the research is credible (Nyeng, 2012, p. 67). Logical positivism has a 1/1 relationship between theory and empirical where one wants to reject speculations of the verification principle. On the other side, according to critical rationalism and Popper, they criticize logical positivism and believes a hypothesis should be falsified rather than verified (Nyeng, 2012, p. 66). Moreover, Popper (1934/1972 in Kleven & Hjardemaal, 2018) claims that a researcher should be self-critical to his/her own hypotheses and to discuss which hypotheses would be relevant for further research.

In our research we can argue for a neutral role as researcher from a positivistic point of view. The reason is due to this type of quantitative research, where we as researchers are almost not involved in our objects/informants, and in a small degree affect the reality (Nyeng, 2012). The results from the NNT in English, 8th grade will be the same unconstrained of our research. On the other hand, the answers from the questionnaire will be added to the results. The questions in the questionnaire are made by us. The design of the questionnaire and the formulation of questions is important to achieve the highest degree of objectivity. If the questions are leading, we may influence the respondents indirectly, which is not beneficial regardless of the scientifical theoretical perspective (Halvorsen, 2008). Opposite of the positivist scientifical point of view is a hermeneutic view where the researcher uses empathy, and the empirical evidence collected is put in a context where the researcher interprets the empirical before becoming theory (Nyeng, 2012, p. 45). A mixed method is also an alternative approach, combining both quantitative and qualitative methods. An extension to the questionnaire could be using an additional approach where the students are to write a log about their extramural media habits prior to the questionnaire. Whether our research fits within hermeneutics can be discussed, but our aim is as mentioned earlier, to explain the events rather than trying to understand why the students answer as they do. Conducting an inductive approach where the researcher is to closely observe his/her informants will involve a broader and more in-depth research on the area. This could be a suggestion for further research, since in this study we want to conduct a research which can be transformed to numbers through a survey to give a true description of certain facts, or aspects of reality.

3.1.2 Epistemology

Epistemology is the philosophical study of knowledge on how to understand and explain the nature, origin and limits of human knowledge. The term epistemology consists of the two Greek words "episteme" which means theoretical knowledge and "logos" which means study. Hence "the study of knowledge" (Nyeng, 2012, p.37). The epistemology in our research would be within objectivism since the information is quantified and points in the direction of quantitative research. An objectivist is concerned with uncovering knowledge (Crotty, 1998). Further Crotty (1998) states that in the physical reality, concrete objects exist. From an objectivistic view, humans tend to objectify things and when first having objectified the term it has the same value although we are getting more insight or increasing our knowledge on the field. We discover a meaning about a term "which has been lying there in wait for them all along" (Crotty, 1998, p.8). The opposite of the objectivism is constructivism, saying the truth or the meaning is not to be discovered but constructed. Through our study we want to investigate if there is an objective truth we can identify through the results from the NNT in English, 8th grade and through the answers from the questionnaire.

3.2 Method and research design

In order to collect data for our second language acquisition research we have chosen to use a survey study, with the aim to collect data from individuals through a written questionnaire (Mackey & Gass, 2012, p. 74). In our research we want to collect data from the National test in English, 8th grade, and check if there are any correlations between the variables in the questionnaire. The variables we use in our data analysis are *scale points on NNT in English, time spent on gaming/streaming services/reading English books weekly, time spent on gaming and social media daily, listening, speaking, writing and reading when gaming or using social media, English content in streaming services.* Our research questions are primarily bivariate since they consist of only two variables (Solbakken, 2019, p. 20). In order to describe the conditions as they are, rather than influencing the conditions by adjustments, a relevant mapping study, a descriptive mapping, would be relevant (Kleven and Hjardemaal, 2018, p. 129). Our research design, based on our choice of research question and hypotheses, is therefore a quantitative research method, more specifically a hypothetical deductive method (Kleven and Hjardemaal, 2018). First, we have a hypothesis; a theoretical assumption/claim we want to strengthen or falsify. By working deductive, testing theory contra reality, we empirically can

test/prove if the hypothesis is true. Second, we use a statistical analysis to check if there is a correlation between the variables. Third, we use the program SPSS to analyze data. The questionnaire is taken at a given time and is therefore called a cross-sectional survey (Halvorsen, 2008, p. 101).

In our research we are dependent on different factors we can measure. These factors are called variables and are the main focus in our research. When specifying characteristic of variables there are, according to Dancey and Reidy (2014), three different variables important when deciding how to analyze our data: continuous, discrete, and categorical variables (Dancey & Reidy, 2014, p. 3-4). Two of our variables are categorical (gender and type of games), explained further this means the values the variable can take are categories. Most of our variables are discrete variables (e.g scale points, time spent on gaming/social media/streaming, speaking/reading/listening when gaming etc.), variables whose value is obtained by counting. In our dataset the variable scale points in NNT could in theory be continuous, but the way we measure it would be discrete (Dancey & Reidy, 2014, p. 4). Therefore, we find it necessary to explain our interval data by dichotomising[4] some of our variables ('I do not spend time on gaming = 0', 'Less than 1 hour = 2' etc.) (Dancey & Reidy, 2014, p. 4).

3.3 Statistical instruments

To examine our research questions and to test our hypotheses we had to use statistical instruments. The statistical instruments used in our study are firstly, the questionnaire answered by our participants, secondly, the pilot testing questionnaire and thirdly, the NNT in English, 8th grade.

3.3.1 The questionnaire

Students from 8th grade answered a questionnaire consisting of three parts: background information, gaming and media habits. In order to investigate our RQs, a survey is the most appropriate approach, as this can inform us about language learners' intended language behavior and give us various background information and biodata from the students. A survey

[4] Converting continuous or discrete variables into categories (Dancey & Reidy, 2014, p. 4)

can be described and analyzed while only asking a fraction of the population (Mackey & Gass, 2012, p. 74-75).

According to Mackey and Gass (2012, p.74-75) the typical instrument used for collecting self-reporting data is a written questionnaire. It is cost-effective and enables you to collect a considerable amount of data in a short amount of time. To ensure that the data we gather helps us answer our research questions and hypotheses we need to work through it thoroughly and try to avoid asking too many questions (Mackey & Gass, 2012, p.76). The questionnaire consists of 20 questions and is easily accessible as the students can follow the link the teacher gives them. We will use a multi-item scale conducted in *Nettskjema*. Nettskjema is a tool for designing and conducting surveys and online data collection developed and operated by the university of Oslo. When the participants open the website, an information capsule (cookies) is made in the participant's internet browser. These capsules closes when the participants complete the survey or close their internet browser, and do not contain any references in forms of form ID. The participants answers will be anonymous and can only be linked to their results from NNP in English due to their candidate number given by their English teacher.

We have designed our questionnaire having in mind six key design issues (Mackey & Gass, 2012, p.74). Our questionnaire is made up of close-ended items, which do not require the respondents to produce any free writing. Further followed by a Likert scale, accompanied by five or six response options to which they *agree* or *disagree.* E.g., we have used options like "often, quite often, sometimes, rarely, never and I do not spend time on gaming", and "Every day, 3-6 times a week, 1-2 times a week, less than once a week and I do not spend time on gaming". The participants have the choice of answering *I do not spend time on gaming*; *I do not use social media* etc. When producing items, we have aimed for short and simple items, in addition to using a simple and natural language (Mackey & Gass, 2012, p.78). The questionnaire is written in Norwegian to ensure that all students understood the questions and to avoid misinterpretation due to the participants lack of English language skills. The participants time spent on the questionnaire varies between 1 minute 35 seconds to 9 minutes 18 seconds.

3.3.1.1 Background

The first part of the questionnaire consists of questions about candidate number, gender, age and language spoken at home. These questions were asked to give us information we can use when analysing our data material. The candidate number gave us the possibility of connecting

the participants answer on the questionnaire to their results on the NNT in English. Gender gives us the ability to investigate if there are differences related to the students EE media habits. Prior research on the area of gender differences is Sundqvist and Wikström (2014) and Sundqvist (2019). Age is asked since the students in 8th grade are 13 and 14 years old, and the question is used as a warm-up question before the main part. Language spoken at home is necessary to ensure that students is learning English as their L2.

3.3.1.2 Gaming

The second part of the questionnaire consists of questions about the students' extramural gaming habits. Our aim for this research is to set focus on extramural English activities which can have an impact on students L2 proficiency. As mentioned in section 2.4.3, researchers as Sylvén and Sundqvist (2012), Sundqvist and Wikström (2015) and Sundqvist (2019) believe gaming may influence L2 proficiency. Therefore, we seek to examine the impact of extramural gaming on students' proficiency in English, in addition to the part of interaction (speaking and writing) when gaming. The questions in the questionnaire ask about time spent on gaming, weekly and daily. How often the participants produce output (speaking and writing), get input (reading and listening) or if they interact (communicate) with others when gaming. Lastly, we asked about what types of games they mostly play. We chose these categories when asking which type of games they mostly play: *Shooting games*, *Role-playing games*, *Online role-playing games*, *Sports games*, *Fighting games*, *Sandbox games*, *Motor games*, *Other games* and *I do not spend time on gaming*. The participants were given the opportunity to answer two options in the question about type of games. Choosing categories for type of games we had in mind previous research mentioned in section 2.3.2 and 2.4.3 (Bytheway, 2011; Kinzie & Joseph, 2015; Rankin et al., 2009; Sundqvist, 2009, 2019; Thorne et al., Zheng et al., 2015).

3.3.1.3 Media habits

Part three of the questionnaire are questions about the students' extramural media habits. The participants were asked on how much time they spend on streaming services weekly and in what degree they meet English content when using streaming services. By streaming services we refer to services as YouTube, Netflix, HBO max, Viaplay, Disney plus etc. Secondly, they were asked how much time they spend on social media each day. 89 % of the girls and 82% of the boys report having contact with their friends through Social media (Norwegian Media Authority, 2020, p. 28). Since so many teenagers report using social media according to the Norwegian Media Authority (2020), also mentioned in section 2.4.1, we only asked about their daily frequency. In addition, we asked how often the participants produce output (speaking and

writing), get input (reading and listening) or if they interact (communicate) with others when using social media. In section 2.1.2 and 2.1.3 we look at former research on the area of output and interaction. The reason for asking questions about output and interaction only when it comes to gaming and social media is because social media is a platform with a different function than streaming services and provides output and interaction in contrast to streaming services which mostly provide input. Additionally, to be able to compare how the participants produce output and interact with others when gaming and when using social media. The last question in this section asks how often the participant read English books, both physical books and online. As mentioned in section, 2.3.1, research on the area of reading books as an extramural activity, indicates that participants who read English books have a higher proficiency than those who do not (Lamvik, 2020; Sundqvist, 2009). In addition, Brevik (2019, p.603-604) suggests that books enhance vocabulary.

3.3.2 Pilot test

We have conducted a pilot test on one class with 8th graders to check the validity of our questionnaire and to see if the participants in that age group had a common understanding and interpretation of the questions we had made. The piloting gave us feedback on how we had formulated two of the questions, what games should be added to the question *What types of games are you playing?* and gave us an estimation on the time taken to fill in the questionnaire. Type of games added after the piloting were League of Legends and Apex. Furthermore, by conducting the piloting we became aware of our setting survey permission. We had to change who had the right to answer the survey in order to send a link which the participants would be able to follow without having to log in and for the survey to still be anonymous.

3.3.3 The National test in English

The NNT in English, 8th grade were taken in September 2021 by all students. Thereafter, the results were stored and analyzed in The Norwegian directorate of training and education through a system called PAS, where the English teacher can log in and get the results. The results can be downloaded through an Excel-file on the computer, where students scale points and level on the test is given. The teachers changed the students name with the participant number given, which they also used when answering the questionnaire, and thereby sent the Excel-file to us. The reliability and validity of the national tests in English are, arguably, high, as they have been developed according to standards, and has been used since 2004, with some adjustments (Norwegian Directorate for Education and Training, 2017) The standards used on

the Norwegian national tests are developed according to guidelines such as Standards for Educational and Psychological Testing (Standards for Educational and Psychological Testing, 1999 in Norwegian Directorate for Education and Training, 2017). From 2014, IRT (item response theory)- analyses were implemented and a new scale introduced, in order to measure changes over time. IRT gives more precise information about the task's degree of difficulty, discrimination and information value. In addition, the tests undergo a piloting before the actual testing (Norwegian Directorate for Education and Training, 2017). When developing the tasks in the test, the Norwegian Directorate for Education and Training follow requirement trials with specific demand as: each task is tested at least once on an appropriate group of students before being put together and tried once as a complete test (Norwegian Directorate for Education and Training, 2017). The national tests aim to measure in what degree the students' basic skills is according to the competence aims in the area of literacy, vocabulary, terms/expressions, and grammatical structures (Norwegian Directorate for Education and Training, 2017). The students in 8th grade get texts from different sources and different genres, such as comics, commercials, instructions, statistics, poems and more (Norwegian Directorate for Education and Training, 2017). The length of the test is set to be 60 minutes (Norwegian Directorate for Education and Training, 2017).

The test results are, as mentioned in chapter 2 (section 2.4.2) divided into five levels of achievement, where level 1 is the lowest, and level 5 the highest. Levels of achievements follow these percentile distributions for 8th grade: 10 – 20 – 40 – 20 – 10. The students test results are converted into scale points, with 50 scale points being the mean. The test has a standard deviation of 10 (Norwegian Directorate for Education and Training, 2017). The scale points tell us what level of achievements the student has on the test. Minimum and maximum scale points are referred to as the lowest and highest scale points achieved by the participants in our research. In 2021, there were 61561 participants completing the Norwegian national tests in English (Norwegian Directorate for Education and Training, 2021d). In addition, the analysis from 2021 shows how many students who have not participated in the test. 4.6% of the boys were exempted from the test, in addition to 2.1% who did not complete the test for other reasons. In comparison, fewer girls have been exempted from the test (2,7%), whereas 2.2% of the girls did not complete the test for other reasons (Norwegian Directorate for Education and Training, 2021d).

3.4 SPSS

All analyses were computed using the software platform IBM SPSS statistics 28. SPSS is a statistical software platform offering advanced statistical analysis, which helps us with running analyses on our data material and giving us numerical data we can interpret to answer our research questions. SPSS gives us the opportunity to explain the answers the participants gave in the survey using descriptive statistics. Using inferential statistics, we can answer our research questions using the following analyses: Spearman's rho, Pearson's r, students t-test. This will be explained further in chapter 4, section 4.2. We are using statistical significance to test our hypotheses (Cumming, 2012; Kline, 2004). Statistical significance is according to Carver (1978, p.381) a claim on whether a test result is found by chance. We have used the term *statistically significant* when explaining our data result and finding in SPSS, suggested by Cohen et al. (2017, p. 240). They say that *significant* as in *statistically significant* does not necessarily mean *important* when using the term to explain statistical findings in our data material.

A high level of statistical significance (e.g. p=0.001) simply means that it is assumed that the likelihood of the found effect occurring by chance alone is very slim, and a low level of statistical significance simply means that it is assumed that the likelihood of the found effect occurring by chance alone is greater (Cohen et al., 2017, p. 740).

3.5 Participants

At the beginning of our research process, our intention was to collect data from four 8th grade classes in a county in Norway. We have a convenience sample, meaning schools were not randomly picked. The reason we chose 8th grade is because the English National test is only set to 8th grade in lower secondary school. In addition, former research on the area such as Sundqvist (2019) is conducted in Sweden and mainly focus on L2 vocabulary learning and proficiency tests, and some of the studies are set to upper secondary school (Sundqvist, 2009, 2012, 2019; Sundqvist & Sylvén, 2012, 2014; Sundqvist & Wikström, 2015). First and foremost, choosing how many participants necessary for our research we completed a statistical sample correlation coefficient using z-transformation (The Chinese University of Hong Kong, n.d.). To calculate the sample size needed we used a calculator from the Chinese University in Hong Kong where we stated the value of alfa as 0.05, and beta as 0.2 and Pearson's r to be 0.4. The reason that we chose these numbers were that we could tolerate a 5% chance of probability

(significance level), and up to 20 % chance of probability (power of test), in addition we expected the Pearson's r to be around 0.4. The test calculated that we should have 47 participants in our research. According to Cohen et al. (2018, p.203), if planning to use statistical analysis on the data, a sample size of thirty is the minimum number recommended.

During our process of collecting answers from the survey we got feedback from the teachers who reported receiving few statements of consents in return from the parents. Consequently, we had to ask two extra teachers in the county if their classes could participate in the survey. One of the reasons we got so few statements of consents in return could be because of a change in the Covid restrictions at the time we sent out the consents. An outbreak of a new variant, Omicron SARS-CoV-2, gave new National recommendations and rules which resulted in a lot of students having school absence due to the new restrictions. In that case we extended our time schedule for the survey to get enough participants to answer the questionnaire. Despite the extension of time, we still struggled with getting enough informants and we had to use the pilot test group for additional data. The reason we chose to use the pilot group is because we contacted other schools to gather more informants, but never heard back. Due to time restrictions we chose to engage our pilot group. Our reflection is that we most definitely saw the advantage of having a plan in advance for getting enough participants, and for starting the survey process as early as possible.

45 participants answered the questionnaire. In our data analysis we have a sample of 42 answers due to one of the candidates had not written their candidate number on the survey, and 2 candidates who answered the survey had not participated in the English National test. As a result, 20 girls and 22 boys are used in our data material. The informants are aged 13 and 14. Table 2 presents the gender distribution in 8th grade among our informants.

		Gender		
		Girl	Boy	Total
Age	13	19	20	39
	14	1	2	3
Total		20	22	42

Table 2 Participants in our sample, divided in gender and age

Figure 2 Boys and girls in our sample

One of the questions in the questionnaire was *What language do you speak at home?* Of the 42 informants, 40 of them answered that they speak *Norwegian*, 1 answered *English* and 1 answered *Other*. In our study we define the language they speak at home as the informants L1. All answers are qualified as valid as they all have English as a subject in school, and we define English as the informants L2.

3.6 Validity and reliability

The quality of quantitative data is expressed through validity and reliability. Validity regards in what degree we are able to measure what we have set out to measure, in addition, in what degree the results are valid for our sample of participants, and if the data gives us findings that

answer our research questions (Maxwell, 2013, p.4-5). The reliability is related to what degree our findings are consistent, and give the same results if retested (Nyeng, 2012).

We believe the internal validity in our MA thesis is relatively high when it comes to our collection of data. The results from the NNT in English 8th grade give an accurate view of the students' level of competence, since the form of the tests do not change every year, only the tasks. To measure changes over time, they use the IRT method, mentioned in section 3.3.3. Internal validity is about relations between variables, in our case this could be the variables time spent on gaming and gender. If one variable correlate with another it could be referred to as causality (Kleven & Hjardemal, 2018, p.118). Our validity can be regarded as low since other factors can influence our results, such as non-lingual influence i.e., family background or aptitude (see section 2.2.1). In addition, if we had used probability sampling (a form of random selection) the validity would be higher, however, our data regarding the results on the NNT in English was normally distributed which speaks for high validity. On the other hand, we had a rather small sample when we divided the groups in gender, and the data was no longer normally distributed. Our data is therefore not applicable for generalizing to a larger population, and we speak only for the sample that we have, making our external validity low.

An issue of reliability is that the students may not take the questionnaire seriously since it cannot be traced back to them. However, since it is anonymous it can facilitate the degree of honesty when it comes to answering hours spent on the different extramural activities. On the other hand, it can also mitigate certain biases, e.g., desirability bias. In addition, both the NNT and the questionnaire is not graded work which may lead to students being less motivated when answering the two. Another issue is that in the questionnaire the students were asked how much time they spent on the different medias. It can be difficult for them to predict hours spent, and a log could have given us a more accurate answer, though this would have demanded more time, thus it was beyond the scope of our MA thesis.

Other factors that may interfere with the validity and reliability are sampling errors, both systematic and random. According to the Norwegian Directorate for Education and Training (2017, p. 16) the NNT in English are to be valid. The tests are to challenge and motivate the students equally, regardless of gender (Norwegian Directorate for Education and Training (2017, p. 16) However the results may be affected by the students' understanding of the tasks, or their mood that day. This can be traced to random sampling errors and can impair the reliability of our research. Some errors occur due to an anxiety that a student may have for tests

and are referred to as systematic sampling errors. Systematic errors affect the validity of the research (Kleven & Hjardemaal, 2018, p.98, 107, 112).

The reliability of our research is good when it comes to NNT in English. This is a statistically tool/instrument used by the government to measure the students' competence and is reviewed every year (see section 3.3.3). The questionnaire has closed-ended items which enables pre-coded data. Another strength regarding our research is that we do not have any terms that need operationalization since we do not measure i.e., their motivation (Kleven & Hjardemaal, 2018, p.97-98).

3.7 Ethical issues

It is important for researchers to be aware of their ethical responsibility. We are to interpret the results we receive through our survey; our viewpoint and subjective preconception should not affect the findings. Ahead of our survey we distributed a consent form for the informants to attend our research in accordance with the demand of free prior and informed consent (Nyeng, 2012, p. 160). Since our informants were under 15 years old, their parents had to consent on their behalf. Our project is reported to the Norwegian center for research data (NSD), and is adhered to their ethical guidelines. Written forms of consents were collected from the pilot group and the other groups of informants. The consents included information about withdrawal. Candidate numbers were used to ensure anonymity.

3.8 Methodology- Summary

In this chapter we have presented the methodology and scientifical theoretical perspective for our study. Furthermore, we have presented the method and research design, followed by the statistical instruments, and software platform used. Lastly, we described the quality of our data through descriptive and inferential statistics before presenting important factors of ethical issues/our ethical responsibilities.

4 Data analysis and results

This chapter will present the findings of our study. All analyses were computed using the software platform IBM SPSS statistics 28. Firstly, it will focus on the answers from the 42 participants who participated in the survey and secondly their results from the Norwegian National test in English, 8th grade. The survey consisted of two parts, where the first part gathered background information about the participants, the second part gathered data about the student's extramural English activity habits outside of school by focusing on descriptive statistics. Finally, our research questions are examined using the following analyses: Spearman's rho, Pearson's r, Student's t-test. The Shapiro Wilk test for normality is used to assess the most appropriate statistical approach.

The following research questions will be answered using the methods mentioned above:

RQ1: Are there significant interactions between extramural English language activities and the score of level in Norwegian National test in English 8th grade?

RQ2: What are the characteristics/trends/tendencies of 8th graders extramural English language media habits?

RQ3: Are there gender group differences related to the students' extramural media habits?

The following hypotheses will be tested statistically:

H1: There will be significant positive correlations between students' extramural English language activities and their test score in Norwegian national tests in English 8th grade.

H2: Students who have a higher level of test score on Norwegian national tests in English interact in English as an extramural activity.

H3: There will be a significant positive correlation between gaming as extramural activity and national score test.

H4: Boys spend more time than girls on extramural gaming.

To further investigate our research questions and hypotheses we will in the next section present the findings of our study. Firstly, by presenting our data through descriptive statistics, and secondly by using inferential statistics.

4.1 Descriptive statistics

In this section we will present our findings of the data material through descriptive statistics. Firstly, we give a brief description of the applied theory, secondly, we present data from the Norwegian National tests (NNT) in English and the questionnaire.

Descriptive statistics is a basic way of handling and analyzing data collected through quantitative research (Dancey & Reidy, 2014, p. 41). In addition, Dörnyei (2007, p.209) describes descriptive statistics as tendencies of a set of data or "to summarize sets of numerical data in order to conserve time and space". A measure of central tendency will give us an indication of the typical score of our sample (Dancey & Reidy, 2014, p. 44). Here, sample refers to the selection of informants in our research (Dancey & Reidy, 2014, p. 41). To explore and explain our data we are to calculate the descriptive statistics by means (sum of all scores), median (middle score in the sample put in rank order) and mode (most frequently occurring score).

Further to describe the descriptive statistics used in our study we firstly mention the range, which, by definition, in Dancey and Reidy is "the highest score in a sample minus the lowest score" (2014, p. 77-78). Secondly, standard deviation (SD) gives us an indication on what is happening between the highest and lowest score in our sample. The SD is important because it forms the basis of the statistical techniques we choose to analyze in our data (Dancey & Reidy, 2014, p. 78). Thirdly, if we have a roughly normal or non-normal distribution according to the plotting of our dataset, skewness and kurtosis is a way of describing symmetry and peakedness or flatness in a distribution. Skewed distributions are those where the peak is shifted away from the center, with an extended tail on one of the sides. A normal skewed distribution has its peak in the middle. Kurtosis measure the spread of distributions as flat (platykurtic), very peaked (leptokurtic) or between these extremes (mesokurtic) and referred to as platykurtic when negatively valued, leptokurtic when positively valued and mesokurtic when of zero value (Dancey & Reidy, 2014, 81-83).

4.1.1 Data from the Norwegian National test in English, 8th grade

To assess data on the participants' English competence, we use data from the Norwegian directorate of Education and training system called PAS. The result from PAS is imported by an Excel document into SPSS for further analyzes. The descriptive statistics from NNT in English are shown in Table 3. We have collected data from students in 8th grade who have also answered our questionnaire (N=42). The mean score of NNT in English, 8th grade was 50.43

scale points [5](SD = 9.528; SE = 1.47). The median was 52, minimum score was 56 and maximum score was 70 (range = 44).

Statistics

Scale points

N	Valid	42
	Missing	0
Mean		50,43
Std. Error of Mean		1,470
Median		52,00
Mode		43[a]
Std. Deviation		9,528
Skewness		-,443
Std. Error of Skewness		,365
Kurtosis		,221
Std. Error of Kurtosis		,717
Range		44
Minimum		26
Maximum		70

a. Multiple modes exist. The smallest value is shown

Table 3 Statistics from NNT in English regarding scale points

According to the dataset the skewness is -.443 and kurtosis 0.221. Our data implies that we have a roughly centered distribution, moreover a small negative skewness with an extended tail to the left where the highest number of scale points can be found. Our value of skewness suggests that we have an approximately normal distribution, and we can therefore use the mean to measure the central tendency (Dancey & Reidy, 2014, p. 82-83). For instance, the kurtosis

[5] Scale points is the students test score on NNT in English and tells us what level of achievement the student has on the test.

in our material suggest that the distribution is leptokurtic, yet Dancey and Reidy say we need not to worry unduly about kurtosis at this stage of our statistical careers (Dancey & Reidy, 2014, p. 82). Figure 3 illustrates the mean (50.43 scale points) of both boys and girls in our sample which is very close to the national average (50) of NNT in English, 8th grade (Norwegian Directorate for Education and Training, 2021c).

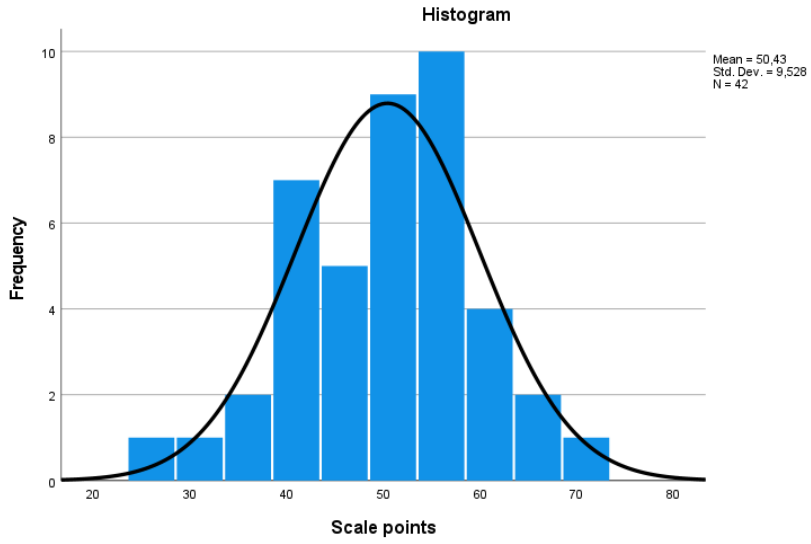

Figure 3 Illustration of mean on Scale points on NNT in English

A sampling error is the difference between the results from the sample we have and the population parameter and occurs because we are not using all members of a target population (Dancey & Reidy, 2014, p. 50). In our sample the sample mean of both genders is close to the national average scale points score (50) of NNT in English, 8th grade, but the difference is that the girls in our sample score 1 scale point more than the boys in contrast to the analyses from the Norwegian Directorate for Education and Traning where the boys score 1 scale point more than the girls (Norwegian Directorate for Education and Training, 2021c).

Descriptive Statistics

Gender		N	Minimum	Maximum	Mean	Std. Deviation
Girl	Scale points	20	34	70	50,95	8,781
	Valid N (listwise)	20				
Boy	Scale points	22	26	66	49,95	10,344
	Valid N (listwise)	22				

Table 4 Descriptive statistics of participants' scale points on NNT in English

4.1.2 Data from extramural activities

In our initial approach to answer **RQ2** *What are the tendencies of 8th graders extramural English language media habits?* we analyze descriptive statistics on the participants' response on media habits and extramural English language activities. In the questionnaire the students were asked about their gaming and media habits. Firstly, we asked about their weekly and daily frequency of gaming. Secondly, we asked about their weekly frequency using streaming services, time spent on social media each day and weekly frequency of reading English books. Table 5 and 6 show how much time they spend on gaming, streaming services, social media and English books.

Weekly frequency					
Extramural activity	Never	Less than once	1-2 times	3-6 times	Every day
Gaming	16,7 %	4,8 %	21,4 %	23,8 %	33,3 %
Streaming services	0,0 %	9,5 %	9,5 %	35,7 %	45,2 %
Reading books	42,9 %	14,3 %	28,6 %	11,9 %	2,4 %

Table 5 Weekly frequency of extramural activity, gaming, streaming services, reading English books

Our data shows (see table 5) that 16.7 % of the participants do not spend time on gaming, hereby referred to as *non-gamers*. In contrast, 33.3 % are daily gamers. 23.8 % spend time on gaming 3-6 times a week, 21.4 % 1-2 times a week and 4.8 % less than once a week. All of the participants spend time on streaming services weekly, with 45.2 % being daily viewers. 42.9 % report that they do not read English books and only 2.4 % (1 participant) read English books on a daily basis. In table 6, how much time the participants spend on extramural activity gaming and social media is presented.

Daily frequency						
Extramural activity	Never	Less than 1 hour	1-2 hours	2-4 hours	4-6 hours	More than 6
Gaming	16,7 %	14,3 %	9,5 %	28,6 %	23,8 %	7,1 %
Social media	2,4 %	9,5 %	16,7 %	21,4 %	26,2 %	23,8 %

Table 6 Daily frequency of extramural activity, gaming, and social media use

7.1 % spend more than 6 hours a day on gaming (table 6). 23.8 % spend 4-6 hours daily on gaming, 28.6 % 2-4 hours, 9.5 % 1-2 hours and 14.3% spend less than one hour daily. 50 % spend more than 4 hours daily on social media. Only 2.4 % (1 participant) report that they do not spend time on social media.

4.1.3 Extramural English

To further investigate **RQ2** *What are the tendencies of 8th graders extramural English language media habits?* we have looked at the data concerning the participants' extramural English language habits, such as reading, listening, speaking, and writing when gaming or using social media (SoMe). According to our data, the participants receive a lot of input, namely reading and listening (see table 7 and 8). In contrast, our data indicates that the participants spend less time on activities that require output or interaction, here speaking and writing.

Gaming						
N=42	Do not spend time	Never	Rarely	Sometimes	Quite often	Often
Reading	16,7 %	4,8 %	0,0 %	19,0 %	11,9 %	47,6 %
Listening	16,7 %	9,5 %	9,5 %	7,1 %	16,7 %	40,5 %
Speaking	16,7 %	4,2 %	21,4 %	23,8 %	16,7 %	16,7 %
Writing	16,7 %	4,8 %	1,9 %	14,3 %	14,3 %	38,1 %

Table 7 Percentage frequency of time spent on reading, listening, speaking and writing English when gaming

59.5% of the participants read English often or quite often when gaming. In accordance, 57.2% listen to English often or quite often when gaming. While 38, 1% of the participants report that they write English often when gaming.

Social media						
N=42	Do not spend time	Never	Rarely	Sometimes	Quite often	Often
Reading	2,4 %	2,4 %	7,1 %	14,3 %	31,0 %	42,9 %
Listening	2,4 %	0,0 %	9,5 %	9,5 %	28,6 %	50,0 %
Speaking	2,4 %	19,0 %	35,7 %	23,8 %	9,5 %	9,5 %
Writing	2,4 %	2,4 %	16,7 %	42,9 %	19,0 %	16,7 %

Table 8 Percentage frequency of time spent on reading, listening, speaking and writing English when using social media

78.6% listen to English often or quite often when using social media. Only 2.4% (1 participant) do not use social media. Only 16,7% write English often when using social media. In general, a greater percentage, 42,9%, report that they sometimes write English when using social media, 35.7% write English often or quite often when using social media.

Streaming services						
N=42	Do not spend time	Never	Rarely	Sometimes	Quite often	Often
English content	0,0 %	0,0 %	4,8 %	14,3 %	28,6 %	52,4 %

Table 9 Percentage frequency of English content when using streaming services

All students report using streaming services (see table 9). According to our data, 81% of the students report meeting English content quite often and often when using streaming services. None of the students' report that they never meet English content when using streaming services.

Reading					
N=42	Never	Less than once	1-2 times	3-6 times	Every day
English books	42,9 %	14,3 %	28,6 %	11,9 %	2,4 %

Table 10 Percentage frequency of reading English books

Approximately 40% (see table 10) report never reading English books. However, nearly 30 % report reading English books 1-2 times a week. Only 2,4% (1 participant) of the participants report reading English books every day.

4.1.4 Type of games

To check if there were any tendencies, we asked which type of games they play most frequently, to answer our second research question **RQ2** *What are the tendencies of 8th graders extramural English language media habits*? They were given the opportunity to answer up-to two answers.

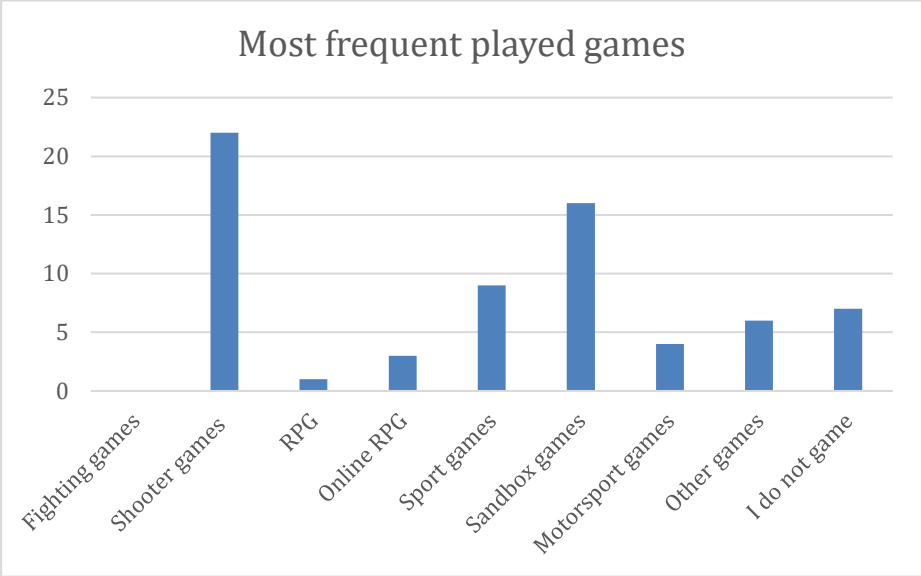

Figure 4 Most frequent played games by the participants

Figure 4 illustrates that the most popular type of game in this study was shooter games (22), followed by sandbox games (16). None of the participants answered fighting games as their most frequent played game. Only 3 participants answered Online RPG as their most frequent played game.

4.1.5 Cross section – high scoring students

In order to answer **RQ2** we define speaking and writing as interacting in English as an extramural activity. We have cross sectioned students' who are at level 4 and 5 on NNT in English to check **H2** *Students who have a higher level of test score on Norwegian national tests in English interact in English as an extramural activity*. Three participants scored within the

highest level (level 5), two boys and one girl. The girl with the highest scale points (70 points, level 5) on NNT in English report never spending time on gaming, while the two boys report that they are daily gamers. In contrast, the girl read English books 3-6 times a week. In total, there are 6 girls and 8 boys at level 4 and 5, whereas 5 of the boys' report to be daily gamers. Only one of the boys' report gaming more than 6 hours every day, while the other 7 boys report spending 2-4 hours or more daily. 11 of the 14 participants at level 4 and 5 report using English when gaming, the other 3 participants report that they never spend time on gaming. 12 of 14 participants report speaking Norwegian at home.

Cross section
Level 4 and 5
Social media

N=14	Do not spend time	Never	Rarely	Sometimes	Quite often	Often
Speaking	1	5	3	3	0	2
Writing	1	0	2	4	4	3

Gaming

N=14	Do not spend time	Never	Rarely	Sometimes	Quite often	Often
Speaking	3	0	2	2	3	4
Writing	3	0	0	2	2	7

Table 11 Cross section of participants at level 4 and 5 on NNT in English and their English extramural activities

When looking at table 11, the participants at level 4 and 5 who report being gamers (7 of 11) speak English quite often or often when gaming, and 9 of 11 report writing English quite often or often when gaming. 1 participant report not using social media and therefore we use the number 13 instead of 14 participants when further reporting on social media. All 13 participants write English in some degree when using social media. 8 of 13 participants report that they rarely, sometimes, or often (rarely: 3, sometimes: 3, often: 2) speak English when using social media. Those of the participants at level 4 or 5 who do not interact in gaming or use social media, read English books in some degree.

4.1.6 Gender differences

To investigate **RQ3** *Are there gender group differences related to the students' extramural media habits?* we have divided the group in gender. A t-test is conducted to investigate if there is a significant difference between the means of the boy and girl group. This will be explored

further in section 4.2.2. Our data indicates that there is a difference in the media habits between the boys and the girls in our sample.

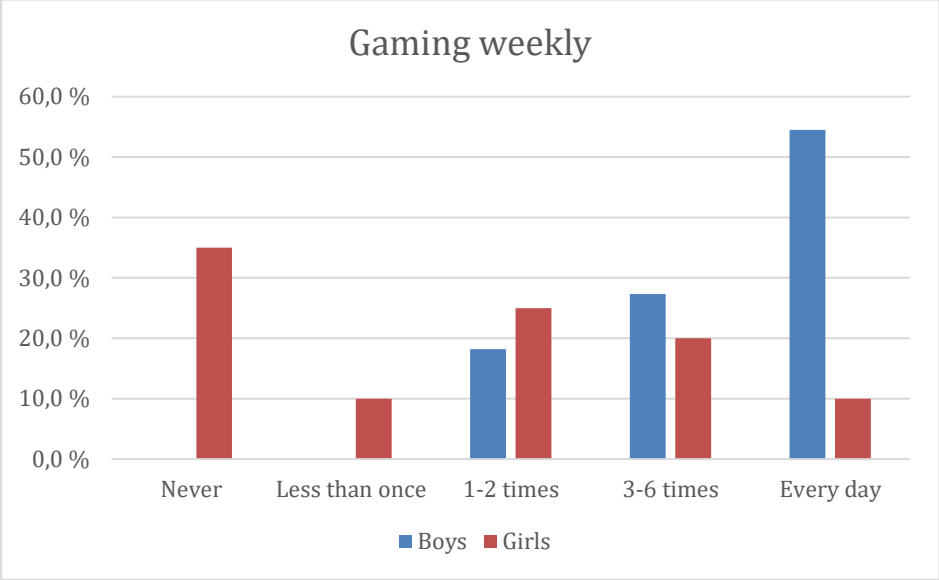

Figure 5 Illustration of time spent on gaming weekly, divided in gender

There are no boys in the *non-gamer* group in our data material (see figure 5). In contrast, 35% (7 participants) of the girls never spend time on gaming.

Figure 6 Illustration of time spent on gaming every day, divided in gender

None of the girls have reported that they spend more than 4 hours a day on gaming, while 59.1 % of the boys do (figure 6).

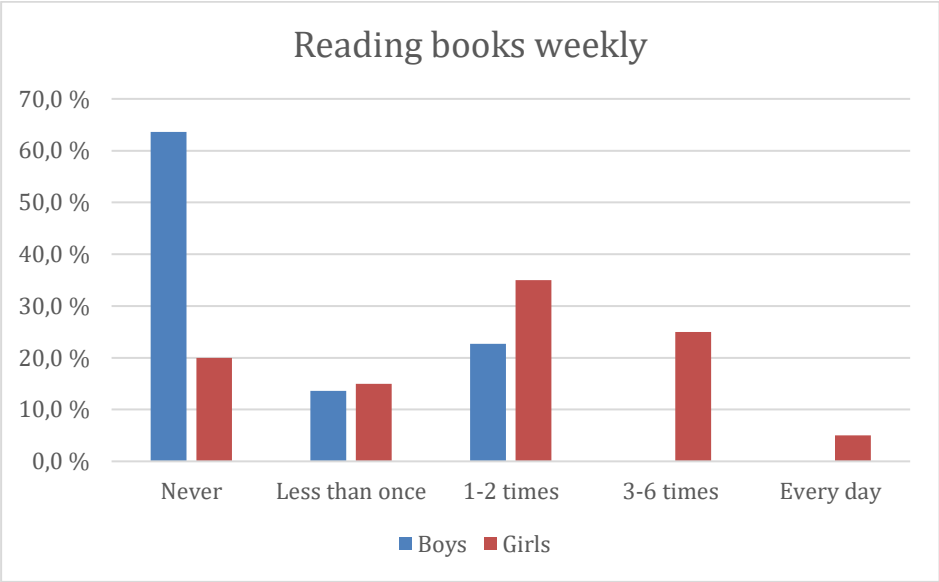

Figure 7 Illustration of time spent on reading English books weekly, divided in gender

Figure 7 illustrates that there are more girls than boys that read English books, and 63.6% of the boys report that they never read English books, while the case for girls is 20 %. Furthermore, 36.3% of the boys report that they read English books 2 times a week or less, while 65% of the girls report that they read English books once a week or more.

4.2 Inferential statistics

In this section we will investigate **RQ1** and **RQ3** through testing **H1**, **H3** and **H4**. Our aims for this section are to investigate if there are significant interactions between the participants scale points on NNT in English and their extramural gaming, media and reading habits.

RQ1: Are there significant interactions between extramural English language activities and the score of level in Norwegian National test in English 8th grade?

RQ3: Are there gender group differences related to the students' extramural media habits?

H1: There will be significant positive correlations between students' extramural English language activities and their test score in Norwegian national tests in English 8th grade.

H3: There will be a significant positive correlation between gaming as extramural activity and national score test.

H4: Boys spend more time than girls on extramural gaming.

According to Mackey and Gass (2012, p. 247) "statistics can never prove a hypothesis, but it can tell you the probability of your results". In our study we test the probability for our hypotheses to match up with the dataset and the results from the survey and the NNT in English. Cohen et al. (2018, p. 730-731) suggests the terms *supported* or *not supported* instead of *rejected* or *not rejected* when discussing the null-hypothesis, because it signals caution. Thus, we will be using the terms *supported* or *not supported* when discussing the null-hypothesis because our thesis is in the area of educational research. In addition, values on correlation coefficients and effect size are in some cases explained differently by researchers. We have chosen to use Cohen et al. (2018) values when referring.

Educational research wishes to know how variables relate to each other and is concerned with establishing relationships between these variables. There are several measures helping researchers to find and test these relationships and the most commonly used correlation coefficients are Spearman rank order (Spearman's rho) and Pearson product moment correlation for interval and rational data (Pearson's r) (Cohen et al., 2018, p. 765-766). In Cohen et al. (2018, p. 741, 766) the correlation coefficients are valued to range from -1.0 to +1.0, while no relationship is represented by zero (0). The coefficient of correlation is in Cohen et al. (2018, p. 746) interpreted like this: <0 +/- 1 weak, <0 +/- 3 modest, <0 +/- 5 moderate, <0 +/- 8 strong, ≥ +/- 0.8 very strong.

4.2.1 Test of Normality

The appropriate tests for normality in our sample are the Kolmogorov-Smirnov test and the Shapiro-Wilk test. Both tests compare the scores of a sample to a normally distributed set of scores. Between zero and one you find the W-value of the test results, where values above '> .5' signifies normality and where normality is not supported when values are below '< .05' (the null hypothesis) (Razali & Wah, 2011, p. 25). A *p* value is the probability that one would get

the same results if the null hypothesis were true (Dancey & Reidy, 2014, p.137). The alpha (α) level sets the level of significance and is typically 0.05 (Cohen et al., 2018, p. 744; Dancey & Reidy, 2014, p. 143). A Shapiro-Wilk test is conducted to test the normality in our sample and to test the null-hypothesis in the variable *scale points on NNT in English*. According to our data, table 12, the p-value is .562 and therefore the null-hypothesis[6] is not supported. It is therefore reasonable to argue that the variable *scale points on NNT in English* is normally distributed because the p-value is > 0.05.

Test of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
Scale points	,977	42	,562

Table 12 Shapiro-Wilk test of normality

4.2.2 Findings RQ3 – T-test

RQ3: Are there gender group differences related to the students' extramural media habits? When having a normal distribution, an independent t-test is an appropriate approach to determine if there is a significant difference between the means of two groups and to check the null-hypothesis. The null-hypothesis is that there is no gender group difference. The t-test in our research is used to compare the means for two different groups, namely the boy group and the girl group (Cohen et al., 2018, p. 777). Although we have a small participant number our data is roughly normally distributed, and we can conduct a t-test. (Dancey & Reidy p. 218) To conduct a t-test we split the file in SPSS to divide the group into a boys and girls set before we check the variable *scale points on NNT in English.*

A confidence interval is a measure of certainty (here used: 95%) to suggest the likely result out of a range (the interval) (Cohen et al., 2018, p. 733). Dancey and Reidy (2014, p.112-113) define a confidence interval as "a statistically determined interval estimate of a population parameter". A standard error of a sampling distribution refers to an estimate of the standard deviation (Dancey & Reidy, 2014, p. 118). We use a one-tailed test to predict that one group

[6] The null-hypothesis for the Shapiro-Wilk test for normality is that the population is normally distributed.

(here: boys) will score more highly than the other (Cohen et al., 2018, p. 732). **H4** is tested with a one-tailed test and portrayed in table 13.

One-Sample Statistics

Gender		N	Mean	Std. Deviation	Std. Error Mean
Girl	How much time do you spend on gaming?	20	1,60	1,429	,320
Boy	How much time do you spend on gaming?	22	3,36	,790	,168

Table 13 One-sample t-test

Values are ranged from 0-4 (0 = I do not spend time on gaming, 1 = Less than once a week, 2 = 1-2 times a week, 3 = 3-6 times a week, 4 = Every day). In our one-tailed test we see that the mean for boys is 3.36 and the mean for girls is 1.60, which means the boys (SD=.790, SE=.168) answer that they spend more time on gaming than girls (SD=1.429, .320). Therefore, **H4** is supported.

4.2.3 Findings RQ1 – Correlations

RQ1 seeks to investigate if there are any statistically significant correlations between EE activities and score of level in NNT in English. The following hypotheses were tested: **H1** *There will be significant positive correlations between students' extramural English language activities and their test score in Norwegian National tests in English 8th grade* and **H3** *There will be a significant positive correlation between gaming as extramural activity and national score test.* These hypotheses were tested by computing a correlation analysis between the variable scale points on NNT in English and the variables time spent on the different extramural activities. We used Pearson's r to measure correlation and the alpha level is set to .05, due to small sample size (Cohen et al., 2018, p.741, 744). Since these extramural activities may contain both Norwegian and English content, we had additional questions in our survey to identify if these activities could be categorized as extramural English activities. Our data shows that there is a weak correlation between time spent on gaming and the variable *scale points on NNT in English* (r=.092, p=0.567, N=42), but the result is not statistically significant. However, the variables *scale points on NNT in English* and reading English books have a modest correlation (r=.341, p=0.027, N=42), it is also statistically significant. There is a modest correlation between time spent on streaming services, and the variable scale points on NNT in

English (r=.224, p=0.154, N=42), however, not statistically significant. The tests for correlations between *scale points on NNT in English* and the variables *time spent on the different extramural activities* are summarized in table 14.

N=42	Pearson Correlation	Sig.(2-tailed)
How much time do you spend on gaming weekly?	0,092	0,562
How much time do you spend on gaming each day?	0,028	0,863
How much time do you spend on streaming services weekly?	0,224	0,154
How much time do you spend on social media each day?	-0,029	0,857
How often do you read English books?	0,341*	0,027

Correlation is significant at the 0.05 level (2-tailed)

Table 14 Summary of correlations between extramural activities, frequencies, and scale points on NNT in English

In our data (see table 15) we see a correlation (r = .347, p = 0.24, N = 42) between *listening to English when using social media (SoMe)* and *scale points on NNT in English*. This is a statistically significant modest correlation. In addition, there are weak correlations between the variables *reading English when using SoMe* and *scale points on NNT in English* (r = .196, p = 0.213, N = 42) and *listening when gaming* (r = .111, p = 0.435, N = 42) and *scale points on NNT in English*, though not statistically significant. The variable *speaking when using SoMe* and and the variable *scale points on NNT in English* correlate negatively (r = -.142, p = 0.37, N = 42). The correlations between scale points in NNT in English and the extramural English language activities are summarized in table 15.

N=42	Pearson Correlation	Sig. (2-tailed)

Reading when gaming	0,089	0,577
Listening when gaming	0,111	0,485
Speaking when gaming	0,124	0,435
Writing when gaming	0,11	0,489
Reading when using SoMe	0,196	0,213
Listening when using SoMe	0,347*	0,024
Speaking when using SoMe	-0,142	0,37
Writing when using SoMe	0,087	0,585
English content in streaming services	0,272	0,081

Correlation is significant at the 0.05 level (2-tailed).

Table 15 Summary of correlations between speaking, writing, listening, and reading English using EE activities, frequencies and scale points on NNT in English

4.2.4 Gender group differences

In section 4.2.3 we found little or zero correlation between the other variables and the variable scale points on NNT in English. However, if we split the groups in gender, we can see that there are further correlations between the variables. To answer **RQ3** *Are there gender group differences related to the students' extramural media habits?* we have looked at correlations between gender and some of the variables in our data material. When we split the file in gender we get a smaller sample size, boy group, N=22, and girl, N=20 (see Dancey & Reidy, 2014, p.177).

We conducted a new Shapiro-Wilk test since we now have a smaller participant number. The data from the boy group has a skewness of -.650 (see table 16), hence not normally distributed. Therefore, we will use Spearman's rho in addition to Pearson's r as correlation coefficients (Dancey & Reidy, 2014, p. 521). The following table shows the mean for both groups (girl group = 50.95, boy group = 49.95), in addition we can observe the skewness of both the boy group and the girl group.

Statistics

Scale points

Girl	N	Valid	20
		Missing	0
	Mean		50,95
	Mode		43[a]
	Std. Deviation		8,781
	Variance		77,103
	Skewness		-,027
	Std. Error of Skewness		,512
	Kurtosis		,130
	Std. Error of Kurtosis		,992
	Range		36
	Minimum		34
	Maximum		70
Boy	N	Valid	22
		Missing	0
	Mean		49,95
	Mode		41[a]
	Std. Deviation		10,344
	Variance		106,998
	Skewness		-,650
	Std. Error of Skewness		,491
	Kurtosis		,259
	Std. Error of Kurtosis		,953
	Range		40
	Minimum		26
	Maximum		66

Table 16 Statistics from NNT in English regarding scale points, split in boy and girl group

Although some of the variables in the boy group correlate, none of them are statistically significant. The Spearman's rho, table 17 indicate that there is a modest correlation (*rho* = .241, *p* = 0.28, *N* = 22) between boys and *time spent on gaming weekly* and *scale points on NNT in English*. If we investigate Pearson's r, there is also a modest correlation (*r* = .381, *p* = 0.08, *N* = 22). We observe a weak correlation between the variable *time spent on streaming services* and *scale points on NNT in English* (*rho* = .194, *p* = 0.388, *N* = 22). However, the Pearson's r correlation coefficient is modest (*r* = .351, *p* = 0.11, *N* = 22). The correlations between the

variables extramural activities, frequencies, and score level on NNT are summarized in table 17.

Boys

N=22	Pearson Correlation	Sig. (2-tailed)	Spearman rho	Sig. (2-tailed)
How much time do you spend on gaming weekly?	0,381	0,08	0,241	0,28
How much time do you spend on gaming each day?	0,107	0,637	-0,046	0,839
How much time do you spend on streaming services weekly?	0,351	0,11	0,194	0,388
How much time do you spend on social media each day?	-0,076	0,738	-0,126	0,577
How often do you read English books?	0,262	0,239	0,233	0,296

Correlation is significant at the 0.05 level (2-tailed).

Table 17 Summary of correlations between extramural activities, frequencies and scale points on NNT in English for the boy group

Girls

N=20	Pearson Correlation	Sig. (2-tailed)	Spearman rho	Sig. (2-tailed)
How much time do you spend on gaming weekly?	0,019	0,936	0,021	0,928
How much time do you spend on gaming each day?	0,063	0,792	0,049	0,837
How much time do you spend on streaming services weekly?	0,009	0,971	0,082	0,732
How much time do you spend on social media each day?	0,003	0,989	-0,004	0,987
How often do you read English books?	0,485*	0,03	0,468*	0,038

Correlation is significant at the 0.05 level (2-tailed).

Table 18 Summary of correlations between extramural activities, frequencies, and scale points on NNT in English for the girl group

Investigating Spearman's rho (see table 18), our data indicate that there is statistically significant moderate correlation (*rho* = .468, $p = 0.038$, $N = 20$) between girls' *scale points on NNT in English* and *reading English books*. Pearson's r also has a moderate correlation (r =

.485, p = 0.03, N = 20) between the two variables and is statistically significant. Figure 8 illustrates the strongest correlation between score points and girls EE activity.

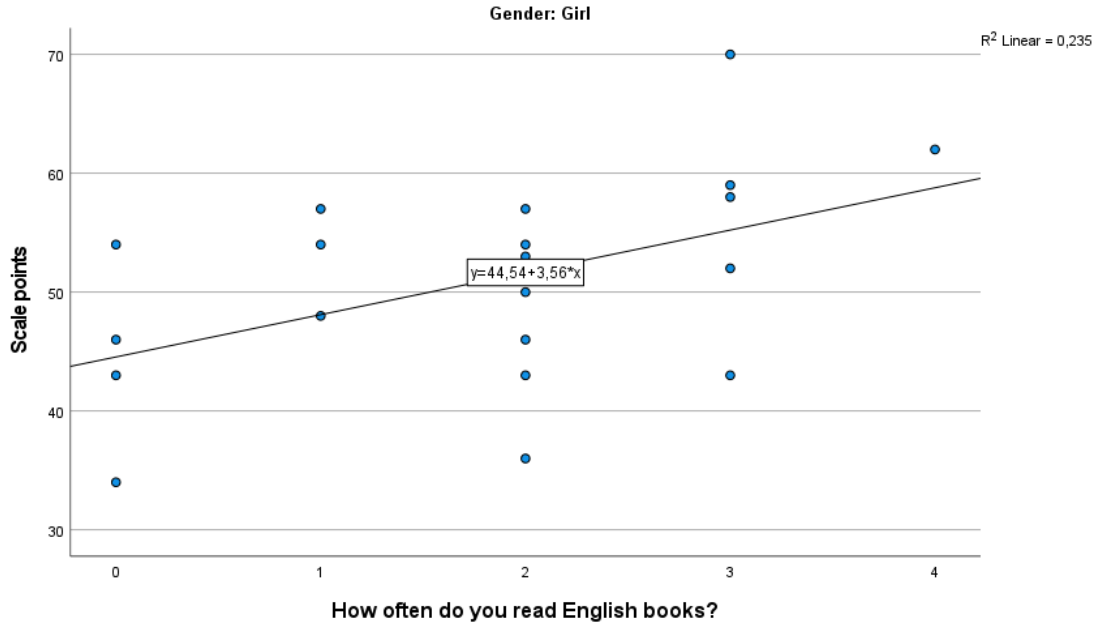

Figure 8 Correlation between score points and girls EE activity.

When investigating correlations on communication while gaming and using SoMe we find a gender group difference between the boys and girls in our sample. In table 19 and 20 we can observe the correlations between scale points on NNT in English and communication when gaming and using SoMe, in addition to English content on streaming services.

Boys

N=22	Pearson Correlation	Sig. (2-tailed)	Spearman rho	Sig. (2-tailed)
Reading when gaming	0,311	0,159	0,357	0,102
Listening when gaming	0,41	0,058	0,440*	0,04
Speaking when gaming	0,47*	0,027	0,498*	0,018
Writing when gaming	0,296	0,182	0,355	0,105
Reading when using SoMe	-0,022	0,923	0,134	0,551
Listening when using SoMe	0,233	0,297	0,39	0,073
Speaking when using SoMe	-0,259	0,244	-0,197	0,38
Writing when using SoMe	-0,1	0,656	0,054	0,81
English content in streaming services	0,285	0,199	0,325	0,14

*Correlation is significant at the 0.05 level (2-tailed).**

Table 19 Summary of correlations between speaking, writing, listening and reading English using EE activities, frequencies and score level on NNT

In the boy group, our data shows that there are statistically significant correlations between *scale points on NNT in English* and the two variables *listening when gaming* (*rho* = .440, *p* = 0.04, *N* = 22) and *speaking when gaming* (*rho* = .498, *p* = 0.018, *N* = 22). Pearson's r indicates that there is one statistically significant correlation between *speaking when gaming* and *scale points on NNT in English* (*r* = .47, *p* = 0.027, *N* = 22).

Girls

N=20	Pearson Correlation	Sig. (2-tailed)	Spearman rho	Sig. (2-tailed)
Reading when gaming	0,062	0,794	0,08	0,738
Listening when gaming	0,014	0,952	0,026	0,914
Speaking when gaming	-0,053	0,823	-0,075	0,754
Writing when gaming	0,033	0,89	0,076	0,749
Reading when using SoMe	0,507*	0,023	0,491*	0,028
Listening when using SoMe	0,533*	0,016	0,573*	0,008
Speaking when using SoMe	-0,029	0,903	0,085	0,722
Writing when using SoMe	0,429	0,059	0,476*	0,034
English content in streaming services	0,24	0,308	0,226	0,338

*Correlation is significant at the 0.05 level (2-tailed).**

Table 20 Summary of correlations between speaking, writing, listening and reading English using EE activities, frequencies and score level on NNT

In the girl group (see table 20) there are three variables that have a moderate correlation with the variable *scale points on NNT in English*, they are also statistically significant when investigating Spearman's rho; *reading English when using SoMe* (*rho* = .491, *p* = 0.028, *N* = 20), *listening to English when using SoMe* (*rho* = .573, *p* = 0.008, *N* = 20) and *writing when using SoMe (rho* = .476, *p* = 0.034, *N* = 20*).* When investigating Pearsons' r, the two variables *reading English when using SoMe (r* = .507, *p* = 0.023, *N* = 20*)* and *listening to English when using SoMe (r* = .533, *p* = 0.016, *N* = 20*)* also have a statistically significant moderate correlation.

In this chapter we have presented the main analyses of our data material in order to examine **RQS 1**, **2**, and **3**. Our results will form the basis for our discussion in chapter 5.

5 Discussion

This chapter discusses the findings and results presented in the previous chapter to answer the aim of our thesis; to shed light on the correlation between extramural activities and the results on the Norwegian National tests in English, 8th grade. Firstly, the aim of this thesis is to investigate if there are significant interactions between extramural activities and the scale points on Norwegian national tests in English 8th grade. In addition, we check if there are any correlations between students' media habits and their National test scores. Students' input, output, interaction, and willingness to communicate using EE activities are most likely to influence students' L2 proficiency according to former studies (Brevik, 2016; Lamvik 2020; Sundqvist 2009, Sundqvist & Wikström, 2015). Secondly, our aim is to further investigate if there are any tendencies of 8th graders extramural English habits. Thirdly, we seek to examine if there are gender group differences related to the students' extramural media habits. To answer **RQ1**, **RQ2** and **RQ3** we have tested **H1**, **H2**, **H3** and **H4** and will provide a discussion of the findings related to prior research on the area and previously presented in chapter 2. In addition, the methodological limitations and weaknesses faced during our research process will be addressed. Finally, we give suggestions for further research.

Research questions being discussed in this chapter:

RQ1: Are there significant interactions between extramural English language activities and the score of level in Norwegian National test in English 8th grade?

RQ2: What are the tendencies of 8th graders extramural English language media habits?

RQ3: Are there gender group differences related to the students' extramural media habits?

Hypotheses tested in chapter 4 and discussed in relation to our research questions:

H1: There will be significant positive correlations between students' extramural English language activities and their test score in Norwegian National tests in English 8th grade.

H2: Students who have a higher level of test score on Norwegian National tests in English interact in English as an extramural activity.

H3: There will be a significant positive correlation between gaming as extramural activity and national score test.

H4: Boys spend more time than girls on extramural gaming.

5.1 Extramural English activities and media habits

As addressed in section 2.4, students meet the English language through different medias in an out-of-school context, in a higher degree than at school. Input by social media, streaming services, gaming and reading books gives students an advantage in learning English as a second language. As Krashen (1985, p. 81) claims, comprehensible input is not enough, the learner "needs to be *open* to the input" (see section 2.1.1). Especially, time exposure of different EE activities may be an influential factor as well as output, interaction, and students' willingness to communicate (Kang, 2005; Long, 1981; Swain, 1985). Furthermore, Brevik (2019, p. 603-604) stresses the fact that reading books is beneficial for a rich vocabulary. As noted in section 2.3.2, gaming has increased over the last two decades and is according to Bakken (2020) what boys spend most of their spare time on in contrast to girls who use most of their time on social media. With this in mind, students are enlightened on the area of English input as a second language, but boys' and girls' preferences differ before entering the English classroom (see section 2.4 and 4.1.6). In the English classroom, we want students to use the basic skills (reading, writing, oral skills and digital skills) to show their competence in the subject. Students' willingness to communicate using basic skills will affect their competence, and there are several important factors to bear in mind on what influence a student's competence, such as socioeconomic status and reading engagement, as addressed in section 2.2 and 2.3.1. We are aware of the latter but will not elaborate this further in our study. In a classroom context, we want students to produce output and interact with each other. Meanwhile, social media, streaming and gaming gives them input naturally, gaming has opened for communication and interaction (output) in L2 outside of school, as addressed in section 2.4.

5.1.1 Interactions and correlations

Presenting our findings of inferential statistics, section 4.2, the data analysis revealed that there are significant interactions between some of the EE activities and the variable *scale points on NNT in English* (see section 4.2.3), in addition we have a significant interaction when we split the group in gender (see section 4.2.4). When looking at the group in total we have a modest correlation between *listening to English when using SoMe* and *scale points on NNT in English*, it is also statistically significant. The variable *scale points on NNT in English* and *reading English books* have a modest correlation, this one also statistically significant (see section

4.2.3). According to Sundqvist (2009, p. 204) EE activities such as *listening to music* are passive or receptive activities while *reading* require the learner to be productive or active, and therefore reading is beneficial for oral output/production and vocabulary. In relevance, former studies on the area predict that *reading books* would be beneficial for vocabulary and language proficiency, and students with a rich vocabulary will most probably be good readers (Brevik, 2019). NNT in English test the student's reading competence, therefore this may be one of the reasons why there is a correlation between the two variables. Nevertheless, the passive activity *listening to music* could be compared to *listening to English when using SoMe*. The correlation between *listening to English when using SoMe* and *scale points on NNT in English* is not, according to Sundqvist (2009) predicted as beneficial for language learning. Henceforth, correlation could be due to all participants using SoMe, except one. Another reason to bear in mind could be that Sundqvist (2009) tested oral proficiency vocabulary while NNT in English mainly test reading competence, vocabulary, and grammar. Still, reading books we predict to be beneficial for language learning in vocabulary and structure. In our study, we did not predict *listening* to correlate with the scale points on NNT in English but wanted to add the question in the questionnaire because according to Bakken (2020) so many students use social media every day.

The variable *Speaking English when using SoMe* correlates negatively with the variable *scale points on NNT in English*, however not statistically significant. Social media is mostly used to read, listen, and write. While speaking when using social media is less common. There are other variables when using SoMe correlating negatively, however in such a small degree (near zero) and therefore we choose not to mention those any further.

The two variables *time spent on gaming weekly* and *time spent on gaming each day* have zero correlation with the variable *scale points on NNT in English* (see section 4.2.3). The sample in total consists of 42 participants. The result differs from our prediction (see section 2.3.2), but this could be due to our sample size. One of the reasons could be because so few of the girls in our sample are frequent gamers as addressed in. On the other hand, when we split the group in gender we find correlations between the variable *time spent on gaming weekly* and the variable *scale points on NNT in English* (see section 4.2.4). This will be discussed in section 5.1.3.

5.1.2 Tendencies of extramural English activities

As mentioned in section 2.4.3.2, English functions as a lingua franca and students meet English content through their media habits. Identified in section 4.1.3, one of the tendencies of 8th graders extramural English language media habits is that a majority of the participants (81%) in our sample report meeting English content often or quite often in streaming services weekly. In addition, none of the participants report never meeting English content when using streaming services. Another tendency is that the participants report that they often or quite often read or listen to English when gaming and using SoMe. They also report speaking and writing more often when gaming than when using SoMe. In addition, 40 % of the participants report never reading English books. All students' report meeting English content (input) to some degree, and this will, according to several researcher (Gass et al., 2013; Harley, 2017; Krashen, 1985), promote language learning if comprehensible. Engaging with English content or having access to a great amount of input, does, however, not mean our participants automatically are able to use it or are willing to (Reinders & Wattana, 2011, p. 7). Output requires the input to be comprehensible, and when comprehensible it may facilitate interaction. In addition, feedback given on the output is necessary for the learner to interact, e.g., speaking and writing when gaming (Long, 1981). In gaming students interact with other players, sometimes across borders, to solve tasks and to advance in a game. This results in English being a lingua franca for many, whereas students increase their vocabulary (Sundqvist & Sylvén, 2014). SoMe and gaming are activities the students voluntarily use outside of school and using English in these activities can be connected to students' willingness to communicate and Krashen's (1985) affective filter hypothesis (see section 2.1). When it comes to speaking, most participants report speaking when gaming, but not so often when using SoMe. Arguable, the learner gets a lot of accessible input both when gaming and when using SoMe. This could result in a low affective filter, where the learner is not anxious about failing and where he or she forgets reading or listening to a message in a foreign language (Krashen, 1985, p.81-82). When gaming, the students in our sample seem to be more comfortable speaking, this may be due to their wish to advance in a game (Sundqvist & Sylvén, 2014).

Looking at tendencies when cross sectioning (see section 4.1.5) the participants at level 4 and 5 on NNT in English we begin with the participants at level 5. The girl with the highest scale points (70 points) report never spending time on gaming but read English books 3-6 times a day. In contrast, the two boys with the highest scale points (both 66 points) report that they are daily gamers. All participants at level 4 and 5 interact in English when using social media or

when gaming. Among the participants at those two levels it is more common to interact in English when gaming than when using SoMe. According to Sundqvist (2019), gaming and interaction influences students L2 proficiency and may therefore be a reason why the participants at level 4 and 5 score at this level on NNT in English. Long's interaction hypothesis (1998) mentions that the best way for a learner to acquire new words or grammatical shapes is in context, or when they are ready for it. Interacting with other players, and/or using output in context when gaming, they progress and learn L2 in their own pace. To advance in a game, Sundqvist and Sylvén (2014) argue that students increase their vocabulary by searching for English words online. We are aware that our cross section has very few participants, making it difficult to generalize, this is also addressed in section 3.6.

5.1.3 Gender group differences

As identified in section 4.2.4, there are gender group differences related to the students' extramural media habits. We first looked at the time spent on the students' extramural activities. The strongest correlation we find in our sample is between the girls' variable *reading English books* and *scale points on NNT in English,* also statistically significant. In comparison, the strongest correlation we find in the boy group is between the variable *time spent on gaming weekly* and the variable *scale points on NNT in English*. In addition, there is a modest correlation in the boys' variable *time spent on streaming services* and the variable *scale points on NNT in English*. None of the correlations in the boy group are statistically significant. There are no other correlations in the girl group when it comes to time spent on extramural activities. As addressed in section, 2.4.3, Sundqvist and Wikström (2015) indicate that there are gaming outcomes in forms of vocabulary for the boys, but not for the girls. This is similar to our results. The low number of participants when splitting the sample in two, with few participants in each group making it less likely to find statistically significant correlations (see section 3.5).

Another gender group difference in our sample, is when it comes to reading English books. According to our data, more girls than boys read English books. Over 60% of the boys report that they never read English books. Moreover, this concurs with the results from PISA 2018, where there were a much higher percentage of boys that reported that they did not spend time on reading in their spare time (68% vs. 48%) (Jensen et al., 2019). However, in PISA 2018 they asked about all reading, whilst we asked specifically about English books.

We have also investigated how often they use or encounter English in their extramural activities. The correlations that are statistically significant in the boy group were between the

variables *scale points on NNT in English* and *speaking* and *listening to English when gaming.* In comparison, the girl group has moderate correlations, that are statistically significant, between the variables *scale points on NNT in English* and *reading, listening* and *writing English when using SoMe* (see section 4.2.4).

Although both genders have statistically significant correlations when it comes to interacting in English and their scale points on NNT in English, the activity differ. As addressed in section 2.4.3, Sundqvist and Wikström (2015, p.74) find the same correlations when it comes to boys and digital gameplay/gaming, since they spend more time on gaming than girls. This also concurs with our research. In addition, Borgonovi (2016) also found that it is more likely that boys spend time on gaming than girls. In our sample, all boys spend time on gaming in some degree, while 35% (7 participants) of the girls report that they never spend time on gaming. More than half of the boys' report that they spend more than 4 hours on gaming each day, however none of the girls spend more than 4 hours each day.

In general, a greater percentage of boys have access to a gaming console (see section 2.5), which could be a reason that more boys than girls spend time on gaming (Bakken, 2020). The strongest correlation is between the boys' variable *speaking when gaming* and *scale points on NNT in English, also statistically significant.* It is important to bear in mind that the correlation between speaking in English when gaming and scale points on NNT in English is stronger than *time spent on gaming* and *scale points on NNT in English*. Time spent on gaming does not necessarily mean they use or communicate in English. Therefore, it is natural that speaking has a stronger correlation then time spent on gaming since speaking is a productive activity (Sundqvist, 2009), in addition to being a skill used to produce output and to interact with others (see section 2.1.2 and 2.1.3). Further, Sundqvist (2009) found that spending time on gaming correlates with oral proficiency. Relating this to our thesis, a combination on the two latter is an advantage for becoming more proficient in L2. The variable *time spent on gaming* is not necessarily sufficient without producing output or interacting in L2. Producing output (speaking) and interacting with others when gaming is an important factor on vocabulary and L2 proficiency according to former studies on the area (Brevik, 2016; Sletten et al., 2015; Sundqvist and Wikström, 2015).

As mentioned above and in section 4.2.4, there were significant interactions between the girl group's scale points on NNT in English and reading, listening, and writing in English when using SoMe, in addition to reading English books. According to Brevik (2019, p.603-604)

books enhance vocabulary, in addition to a lasting interest in text, and could explain the correlation between reading English books and scale points on NNT in English (see section 2.3.1). Furthermore, reading in SoMe and school texts could be linked, and therefore may be a reason why there is a correlation between reading in SoMe and the participants' scale points on NNT in English (see section 2.5). When looking at the correlation between the girls' variables *listening to SoMe* and *scale points on NNT in English*, it could be explained due to their interest and motivation for using SoMe. We may relate this to their affective filter being down and what they listen to may become intake, not only input (see section 2.1.1). Input could be all English that they encounter when using SoMe. However, for input to become intake it must be comprehensible for the learner. In addition, the learner must be *open* for the input to *take in* what they listen to, and for it to be internalised (Corder, 1967). Reinders and Wattana (2011) argue that having a great amount of accessible input do not necessarily mean that they are willing to or able to use it.

5.2 Pedagogical implications

The findings of our study have some pedagogical implications. Firstly, when it comes to formative assessment, Hattie (2009, p.174 in NOU 2019:3, p.209) implies that it could be beneficial for learning outcomes but the effect depends on how the feedback is given. Our study found that there are correlations between English extramural activities and 8th graders competence in English. The strongest correlations for the group in total are listening to English when using streaming services and reading books. Both correlate with the results on NNT in English, but to different degrees. When we split the group in gender the variables reading books for the girls, and time spent on gaming for the boys is the activity correlating the most with the results on NNT in English. Formative assessment is today based on the teacher and the schools' practice (NOU 2019:3, p. 209). Having in mind what type of English extramural activity both genders prefer is an important factor when planning adapted teaching. Several researchers have found a link between extramural activities and L2 vocabulary outcomes and proficiency (Sundqvist 2009) However, former research shows that teachers have applied teaching-to-test strategies (Werler and Færevaag, 2017), since the test system was primarily made to give information on school quality, and secondly for pedagogical use in school (NOU 2014:7, p. 105).

Secondly, it is important for teachers to be aware of the extent to which gender differences influence the formative assessment (NOU 2019:3, p.210). There are gender differences on adolescents preferred type of media, and the Norwegian media authority (2020) and Bakken (2020) show this. Also, Kuppens (2010) found a significant gender difference in type of media used. NOU 2019:3 mentions that girls and boys respond differently when it comes to formative and summative assessment, where boys are triggered by competition, girls hesitate to participate in activities involving risks.

5.3 Methodological limitations and weaknesses

There are limitations to the methodological choices we have made throughout our research. This study has been conducted on 45 participants from 8th grade. 2 of the 45 participants could not undergo further studies because they had not participated on the NNT in English, and we had to dismiss 1 participant because he or she had not written his or her candidate number on the questionnaire, making it impossible to link it to the results on NNT in English. In addition, we ran into some challenges regarding the ongoing pandemic, covid-19. This made it more difficult for us to recruit teachers and students for our study. We therefore had fewer participants than what we had set out for in the beginning of this study (see section 3.4). Another disadvantage is that we had a convenience sample, and not a random selection. In addition, when we split the data in gender, we had an even smaller participant number in the two groups (boys=22, girls=20) that was not-normally distributed. Consequently, the possibility of generalizing our material is limited. However, one could say that there are tendencies. With more participants, we could have gained more valid results on our findings. On the other hand, to make the results more reliant, we could have used a mixed method, combining the data from the quantitative research with qualitative in-depth interviews with some of the participants, for example the one with the highest level on NNT in English. Another approach could have been to have the students write a log. This would have given us more secure data on time spent on their extramural activities. However, this may have been too time-consuming.

The NNT in English took place in September 2021, and the questionnaire in December 2021-January 2022 in a classroom setting. The students' teachers oversaw both the test in NNT in English and the questionnaire. The participation in NNT in English is obligatory for all students unless they are exempted. The participation in the questionnaire, on the other hand, was voluntarily. Therefore, a weakness with the test results on NNT in English is that the students

that struggle with the English subject, and receive special education, may be exempted from the test, depending on school policy. The participation on the questionnaire was anonymous, and not graded work, which potentially could lead to some students not taking it seriously.

Lastly, we would like to address the fact that we did not get in depth with type of games. We gave the participants the possibility of choosing two options in type of games. Thus, making it more difficult for us to see correlations between type of games played, and scale points on NNT in English.

5.4 Further research

The possibilities for further research need to be addressed. For further studies on English extramural activities effect on SLA, we suggest these topics: interaction when gaming, type of games played, and how to implement NNT for the better purpose for teachers and students when it comes to formative assessment. In addition, we suggest another research method to go more in-depth of the material, or to broader the sample using a random selection, making it possible to generalize the results.

Interaction is another interesting field for more research. Brevik (2016) suggest more research on the area of in-game communication. We find it relevant to investigate how gamers interact with each other and their willingness to communicate. Interaction is also up for more research using a qualitative method. In addition, we suggest to further examine the relevance of type of games played when it comes to English extramural activities (also mentioned by Sundqvist, 2019; Sylvén & Sundqvist, 2012). Other potential factors such as aptitude, motivation, affect and attitude (see chapter 2.2.1) are also essential to investigate. Finally, more research is needed on the field of NNT in English as a tool for the better purpose for teachers and students when it comes to formative assessment, not only as a tool to measure school quality.

Our research design is within quantitative research method, more specifically a hypothetical deductive method (Kleven & Hjardemaal, 2018). We have hypotheses we empirically test to check if the hypotheses are true. To further investigate our research questions and hypotheses, conducting qualitative research, more specifically an inductive method would be useful. The inductive approach, where the researcher is closer to his/her informants than we are in our study will involve a broader and more in-depth research on the area. A suggestion is to go further in-depth with the participants we cross-sectioned in our sample, those at level 4 and 5. The gaming

outliers would also be relevant to examine further using a hermeneutic view. Opposite of the positivist scientifical view we have used in our study, is the hermeneutic view. In a hermeneutic view the researcher uses empathy and interpret collected evidence before the empirical becomes theory (Nyeng, 2012, p. 45). A mixed method is also an alternative (see section 5.4).

6 Conclusion

To sum up, in this MA thesis we have investigated if there are significant interactions between the participants extramural English language activities and the results on the NNT in English 8th grade. Furthermore, we have looked at the tendencies regarding 8th graders extramural English language media habits. Finally, we have examined if there are gender group differences related to the students' extramural media habits.

To investigate our research questions, we have tested our hypotheses using a quantitative method, more specifically a hypothetical deductive method. We gathered test results from the NNT in English with the help from the participants' teachers in English. In addition, we used a questionnaire to gather information about their background, gaming-, and media habits. The participants' English teachers helped us link the questionnaire with the participants' results on NNT in English.

We found significant interactions between the participants' extramural English language activities, specifically the variables *listening when using SoMe* (r = .347, p = 0.24, N = 42) and *reading English books* (r = .196, p = 0.213, N = 42) correlates with the variable *scale points on NNT in English* in the group as a total. The tendencies were that a majority of the participants reported meeting English content often or quite often in streaming services. Another tendency was that the participants read and listened to English when using SoMe and when gaming. Lastly, all participants at level 4 and 5 on NNT in English interact in English when using SoMe or when gaming. The strongest gender group differences related to the participants' extramural media habits were the girls' variable *reading English books* (*rho* = .468, p = 0.038, N = 20) and *scale points on NNT in English* and the boy group's variable *time spent on gaming weekly* (*rho* = .241, p = 0.28, N = 22) and *scale points on NNT in English*, however the boys' correlation was not statistically significant. Furthermore, we found significant interactions between the girls' variable *scale points on NNT in English* and *reading* (*rho* = .491, p = 0.028, N = 20), *listening* (*rho* = .573, p = 0.008, N = 20) and *writing (rho* = .476, p = 0.034, N = 20*) English when using SoMe*, and the boys' variable *scale points on NNT in English* and *speaking* (*rho* = .498, p = 0.018, N = 22) and *listening* (*rho* = .440, p = 0.04, N = 22) *to English when gaming.*

Lastly, we will address our methodological weaknesses. Firstly, a small sample size, with a convenience sample, makes it difficult to generalize our data to a larger population. Secondly, some of the weakest students may have been exempted from NNT in English. Thirdly, a more

secure method to investigate the actual time that students spend on extramural activities would have been more beneficial for our study. Nevertheless, we hope our research can shed light on students' extramural English language media habits that may influence their result on NNT in English. Finally, we argue that it is important for teachers to be aware of their students' extramural English language media habits and what extramural activities that improve their competence in the English subject. Furthermore, gender differences in forms of extramural English language activities are also stressed and should be relevant when teachers plan their lessons and to adapt teaching.

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Appendix 1

Samtykkeerklæring

Beskrivelse av masteroppgaven

Vi er to studenter som skriver master i engelsk fagdidaktikk, emne LRU-3092, ved UiT Norges arktiske universitet. Prosjektgruppen består av veileder Christopher Loe Olsen, og studentene Elisabeth Halvorsen og Therese Haaland.

Formålet med vår forskning er å rette fokus mot nasjonale prøver i engelsk og gaming. Analyser av nasjonale prøver 2019 viser at gutter og jenter presterer mer jevnt i engelsk enn i lesing og regning, hvorpå guttene ligger ett skalapoeng over jentene i snitt (Kunnskapsdepartementet, 2019). Videre viser analyser at jentene har høyere karakter i standpunkt og ved eksamen i engelsk (Utdanningsdirektoratet, 2019). Vi er begge engelsklærere i ungdomsskolen og synes det er interessant at resultatene varierer i den grad de gjør, og vi ønsker å se om det finnes en årsakssammenheng da vi ser nytteverdien i egen undervisningspraksis.

I den forbindelse ønsker vi å gjennomføre en spørreundersøkelse med elever på 8. trinn. Hver elev vil få et kandidatnummer som føres på et spørreskjema. Elevens spørreundersøkelse vil så kobles opp imot resultatet fra nasjonale prøver i engelsk. Elevens resultat og svar vil være anonymt, og det er faglærer i den spesifikke klasse som vil gjennomføre undersøkelsen.

Det er frivillig å delta

Deltakelsen i spørreundersøkelsen er frivillig. Elevene kan når som helst trekke tilbake resultat gitt i spørreundersøkelsen. Det vil ikke ha noen negative konsekvenser for eleven hvis han/hun ikke vil delta eller senere velger å trekke deg.

Anonymitet

Spørreundersøkelsen og resultatene fra Nasjonale prøver vil være anonymisert. Vi som studenter vil heller ikke vite hvem som har svart hva. Det er faglærer, som allerede har tilgang til resultater fra Nasjonale prøver i engelsk gjennom PAS, som vil gi oss resultatene

anonymisert hvor hver elev har fått et kandidatnummer. Opplysningene vi samler inn slettes når prosjektet avsluttes/oppgaven er godkjent, noe som etter planen er i mai 2022.

Elevens rettigheter

Så lenge eleven kan identifiseres i datamaterialet, har eleven rett til:

- innsyn i hvilke opplysninger vi behandler om eleven, og å få utlevert en kopi av opplysningene
- å få rettet opplysninger om eleven som er feil eller misvisende
- å få slettet personopplysninger om eleven
- å sende klage til Datatilsynet om behandlingen av elevens personopplysninger

Hva gir oss rett til å behandle personopplysninger om ditt barn?

Vi behandler opplysninger om ditt barn basert på ditt samtykke. På oppdrag fra UIT Norges arktiske universitet har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?

Hvis du har spørsmål til studien, ta kontakt med:

- UIT ved Christopher Loe Olsen på epost [----] eller telefon: [----]
- Therese Haaland på epost [----] eller telefon: [----]
- Elisabeth Halvorsen på epost [----] eller telefon: [----]

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:

- NSD – Norsk senter for forskningsdata AS på epost (personverntjenester@nsd.no) eller på telefon: 55 58 21 17.

Før spørreundersøkelsen ber vi deg om å samtykke i at ditt barn kan delta ved å undertegne på at du har lest og forstått informasjonen på dette arket.

Med vennlig hilsen

Studenter *Prosjektansvarlig/veileder*

Therese Haaland & Elisabeth Halvorsen Christopher Loe Olsen

Samtykke

Jeg har mottatt og fått informasjon om prosjektet og har fått anledning til å stille spørsmål. Jeg samtykker til:

- ☐ At eleven kan delta i spørreundersøkelse
- ☐ At resultat fra nasjonal prøve i engelsk kan kobles mot svarene i spørreundersøkelsen

Navn på elev:

Jeg samtykker til at mitt barns opplysninger behandles frem til prosjektet er avsluttet

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(Signert av prosjektdeltakers foresatt, dato)

Appendix 2

Samtykkeerklæring

Beskrivelse av masteroppgaven

Vi er to studenter som skriver master i engelsk fagdidaktikk, emne LRU-3092, ved UiT Norges arktiske universitet. Prosjektgruppen består av veileder Christopher Loe Olsen, og studentene Elisabeth Halvorsen og Therese Haaland.

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I den forbindelse ønsker vi å gjennomføre en spørreundersøkelse med elever på 8. trinn. Hver elev vil få et kandidatnummer som føres på et spørreskjema. Elevens spørreundersøkelse vil så kobles opp imot resultatet fra nasjonale prøver i engelsk. Elevens resultat og svar vil være anonymt, og det er faglærer i den spesifikke klasse som vil gjennomføre undersøkelsen.

Pilotundersøkelse

Spørreundersøkelsen vi gjennomfører med denne klassen er en pilotundersøkelse. Det vil si at resultatene vi samler inn i forbindelse med spørreundersøkelsen skal brukes til å evaluere om spørreskjemaet kan brukes slik det er, eller om vi må gjøre endringer på skjemaet.

Det er frivillig å delta

Deltakelsen i spørreundersøkelsen er frivillig. Elevene kan når som helst trekke tilbake resultat gitt i spørreundersøkelsen. Det vil ikke ha noen negative konsekvenser for eleven hvis han/hun ikke vil delta eller senere velger å trekke deg.

Anonymitet

Spørreundersøkelsen og resultatene fra Nasjonale prøver vil være anonymisert. Vi som studenter vil heller ikke vite hvem som har svart hva. Det er faglærer, som allerede har tilgang til resultater fra Nasjonale prøver i engelsk gjennom PAS, som vil gi oss resultatene anonymisert hvor hver elev har fått et kandidatnummer. Opplysningene vi samler inn slettes når prosjektet avsluttes/oppgaven er godkjent, noe som etter planen er i mai 2022.

Elevens rettigheter

Så lenge eleven kan identifiseres i datamaterialet, har eleven rett til:

- innsyn i hvilke opplysninger vi behandler om eleven, og å få utlevert en kopi av opplysningene
- å få rettet opplysninger om eleven som er feil eller misvisende
- å få slettet personopplysninger om eleven
- å sende klage til Datatilsynet om behandlingen av elevens personopplysninger

Hva gir oss rett til å behandle personopplysninger om ditt barn?

Vi behandler opplysninger om ditt barn basert på ditt samtykke. På oppdrag fra UIT Norges arktiske universitet har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?

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- Therese Haaland på epost [----] eller telefon: [----]
- Elisabeth Halvorsen på epost [----] eller telefon: [----]

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:

- NSD – Norsk senter for forskningsdata AS på epost (personverntjenester@nsd.no) eller på telefon: 55 58 21 17.

Før spørreundersøkelsen ber vi deg om å samtykke i at ditt barn kan delta ved å undertegne på at du har lest og forstått informasjonen på dette arket.

Med vennlig hilsen

Studenter	*Prosjektansvarlig/veileder*
Therese Haaland & Elisabeth Halvorsen	Christopher Loe Olsen

Samtykke

Jeg har mottatt og fått informasjon om prosjektet og har fått anledning til å stille spørsmål.

Jeg samtykker til:

- ☐ At eleven kan delta i spørreundersøkelse
- ☐ At resultat fra nasjonal prøve i engelsk kan kobles mot svarene i spørreundersøkelsen

Navn på elev:

Jeg samtykker til at mitt barns opplysninger behandles frem til prosjektet er avsluttet

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(Signert av prosjektdeltakers foresatt, dato)

Appendix 3

Spørreundersøkelse om gaming

Obligatoriske felter er merket med stjerne

Tusen takk for at du deltar i vår spørreundersøkelse om gaming. Vi er veldig interessert i å finne ut om det er en sammenheng mellom tiden du bruker på utenomfaglige aktiviteter som gaming og sosiale medier og dine ferdigheter i engelsk. Spørreundersøkelsen er anonym. Din identitet vil holdes skjult.

Kandidatnummer

Kjønn

Alder

Hvilket språk snakker du mest hjemme? (Kryss av flere om du bruker mer enn ett)

Du må velge minst ett svaralternativ.

- [ ] Norsk
- [ ] Engelsk
- [ ] Annet

Gaming

Hvor ofte gamer du i løpet av uka på f.eks Playstation, Xbox eller data?

- ○ Hver dag
- ○ 3-6 ganger i uka
- ○

1-2 ganger i uka

Mindre enn 1 gang i uka

Jeg gamer ikke

Hvor lenge gamer du hver dag på f.eks Playstation, Xbox eller data (ca. hvor mye)?

Over 6 timer

4-6 timer

2-4 timer

1-2 timer

Mindre enn 1 time

Jeg gamer ikke

Snakker du engelsk (muntlig) når du gamer?

Ofte

Ganske ofte

Av og til

Sjeldent

Aldri

Jeg gamer ikke

Skriver du engelsk når du gamer?

Ofte

Ganske ofte

Av og til

Sjeldent

Aldri

Jeg gamer ikke

Leser du engelsk når du gamer?

Ofte

Ganske ofte

Av og til

Sjeldent

Aldri

Jeg gamer ikke

Lytter du til engelsk når du gamer, for eksempel hører andre snakke, får instruksjoner i spillet?

- Ofte
- Ganske ofte
- Av og til
- Sjeldent
- Aldri
- Jeg gamer ikke

Hvilke type spill spiller du mest? (Maks to svar)

Du må velge minst ett svaralternativ.

- [ ] Skytespill (CS:GO, Fortnite, CoD, Battlefield, Apex osv.)
- [ ] Rollespill (The Witcher, Skyrim, Zelda, Fallout, The Sims (ikke multiplayer) osv.)
- [ ] Online rollespill (WoW, Runescape, Final Fantasy XIV, The Sims Multiplayer, League of Legends osv.)
- [ ] Sportsspill (Fifa, Football Manager, Rocket League, NBA, WWE osv.)
- [ ] Slossespill (Super Smash Bros, Street Fighter, Tekken osv.)
- [ ] Sandkassespill (Minecraft, GTA, Roblox osv.)
- [ ]

Motorspill (The Crew, Farming Simulator, Snow Moto Racing Freedom, Grand Tourismo, Forza osv.)

☐ Annen sjanger

☐ Jeg gamer ikke

Kommuniserer du med andre når du gamer?

○ Ja, både på norsk og engelsk

○ Ja, hovedsaklig på norsk

○ Ja, hovedsaklig på engelsk

○ Nei

○ Jeg gamer ikke

Medievaner

Hvor mye tid bruker du på strømmetjenester som youtube, netflix, hbo max, viaplay, disney plus og lignende i løpet av uka?

○ Hver dag

○ 3-6 ganger i uka

○ 1-2 ganger i uka

○ Mindre enn 1 gang i uka

○ Jeg bruker ikke strømmetjenester

I hvor stor grad møter du engelspråklig innhold på disse strømmetjenestene?

F. eks ser filmer/serier med engelsk tale.

- Ofte
- Ganske ofte
- Av og til
- Sjeldent
- Aldri
- Jeg bruker ikke strømmetjenester

Hvor mye tid bruker du på sosiale medier som tik tok, snapchat, facebook, instagram og lignende hver dag?

Ca. hvor mye?

- Over 6 timer
- 4-6 timer
- 2-4 timer
- 1-2 timer
- Mindre enn 1 time
- Jeg bruker ikke sosiale medier

Skriver du engelsk på sosiale medier?

- Ofte
- Ganske ofte
- Av og til
- Sjeldent
- Aldri
- Jeg bruker ikke sosiale medier

Leser du engelsk på sosiale medier?

- Ofte
- Ganske ofte
- Av og til
- Sjeldent
- Aldri
- Jeg bruker ikke sosiale medier

Lytter du til engelsk på sosiale medier?

- Ofte
- Ganske ofte

Av og til

Sjeldent

Aldri

Jeg bruker ikke sosiale medier

Snakker du engelsk (muntlig) på sosiale medier?

F. eks i samtaler med andre eller gjennom videoer du deler.

Ofte

Ganske ofte

Av og til

Sjeldent

Aldri

Jeg bruker ikke sosiale medier

Hvor ofte leser du engelske bøker?

Også bøker på nett.

Hver dag

3-6 ganger i uka

1-2 ganger i uka

Sjeldnere enn 1 gang i uka

Jeg leser ikke bøker på engelsk