

English learners' code-switching during gameplay

Analyzing Norwegian lower-secondary students' communication during gameplay in the ESL classroom.

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Abstract

Gaming, and how gaming impacts students and their learning is a topic that is frequently discussed and studied in both research and educational practices. Studies have found that there is a positive correlation between out-of-school interaction with the English language during gameplay and an increase in English proficiency for Scandinavian learners of English (Brevik, 2016; Sylvén & Sundqvist, 2012). However, the impact of games has not been widely studied yet. This thesis studies recordings of conversations of Norwegian 8th and 9th grade students while they play the game “Keep Talking and Nobody Explodes”. The main goal of this project is to analyze how much of the communication is, in fact, in English, and find out if and how much the students switched back to Norwegian. A secondary goal was to study the impact of gameplay in the classroom on language learning, especially in the way it impacts student motivation. This study found that more than 90% of the communication during the gameplay was in English, indicating that “Keep Talking and Nobody Explodes” indeed facilitates large amounts of English use in the classroom. The limited use of Norwegian was mostly related to regulation of interpersonal relationships, although a few cases of code-switching may be related to troubles in lexical access. The impact on student motivation as a result of playing this game seemed to correlate with the degree to which the game met the students’ psychological needs, as described by Self-Determination Theory (Ryan & Deci, 2020). Successful completion of in-game tasks led to increased motivation, while repeated failure led to decreased motivation and students commenting negatively on the game, before ultimately giving up completely.

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1.0 Introduction

Playing games and learning through play is and always has been a vital part of the development of younglings in the animal kingdom. This is certainly also the case for humans, as much of the socializing and development of young children comes through interactions with peers and older human beings. A rather new phenomenon, however, is the introduction of technologies, and more specifically digital technologies that impact both the socialization processes, and the learning processes children go through nowadays. A recent large-scale study done on media habits of children aged 9-18 in Norway, shows that as much as 76% of them play digital games during their spare time (Medietilsynet, 2022, p. 90). When it comes to interaction with social media the reported number is as high as 90%, and 95% of youth is reported to interact with the website YouTube specifically (Medietilsynet, 2022, p.148-149). Even Norwegian newspapers report on the impact of the internet on children's language, due to their frequent interactions with it, even to the extent where foreign language learned on the internet might compete with, or even replace their mother tongue (Nipen, 2023).

Children's leisure interests and the amount of English used in them have not gone unnoticed by researchers. During the last decades more and more research has been published on English outside of educational settings, also known as "Extramural English" (EE), and how it impacts children's English proficiency. For this Master project I will study students' oral language production and codeswitching in the classroom, while exploring the viability of playing a game as an activity that stimulates English language production. I will look specifically at the amounts of English and Norwegian being used, as well as analyzing what kind of information is conveyed in each of the languages. The aim of the study is to assess the viability of playing a game with the goal of stimulating oral secondary language production in the classroom.

I have defined my main research question (the term "research question" will be further referenced as RQ) as: "When and how much do Norwegian Lower-secondary students speak English, while playing a game in the ESL classroom?".

Additionally, six secondary RQs have been formed, the answers to which will help answer the main RQ. These were defined as follows:

RQ1: How much of the oral communication during the playing of the game is in English?

RQ2: What kind of information is conveyed in English?

RQ3: What kind of information is conveyed in Norwegian?

RQ4: What could be the explanation for students switching from L2 to L1?

RQ5: Is there a difference in language use between eighth grade and ninth grade students?'

RQ6: Can computer games such as “Keep talking and Nobody Explodes” contribute to English learning in the ESL Classroom?

1.1 Structure of this thesis

The rest of this thesis is structured in five main chapters. The following chapter (2) presents relevant theory and research, acting as both the foundation for, as well as a supplement to, the research presented later in this thesis. The next chapter is the methodology chapter. This chapter (3) explains the research design, data collection and analysis, and it also reflects on the reliability and validity of the current project. It also highlights some ethical issues related to the project and it describes the game that was used. Thereafter comes the results chapter (4), where the results of the study are presented. The results are supplemented with quotes from student recordings for exemplification and illustration of the findings. The discussion chapter (5) compares the findings of the present study with the theory and research that is previously referred to in chapter two. The concluding chapter (6) summarizes the findings of this study and suggests areas and topics for further research.

2.0 Theoretical Background

2.1 Language learning – Second language acquisition

2.1.1 General Learning Theory

Theories around language learning, and more specifically Second Language Acquisition (SLA) should be seen in the light of general learning theories to be fully understood, as well as successfully implemented in a classroom. Vygotsky's Socio-Cultural Learning theory is widely known and accepted in Norwegian Education. This theory states the importance of learning for one individual through social interactions with other individuals (Vygotsky, 1978, p.39). Through these interactions the individual can reach a higher level of knowledge or competence which they did not have beforehand. The distance between the individual's current developmental level and their potential development is what Vygotsky calls the "Zone of Proximal Development" (ZPD) (Vygotsky, 1978, p. 39). Another key word in Vygotsky's theory is scaffolding. Scaffolding can be explained as the process through which a more knowledgeable person helps another individual reach their ZPD. In Norwegian educational realms it will often be the teacher who scaffolds the learning process for the students. This is also reflected in the Norwegian educational laws, according to which all Norwegian students have a right to teaching that is adapted to their level (Education Act, 1999, §1.3). The process of scaffolding does, however, not always need to involve a teacher. Peers can, through cooperative communication, also scaffold the learning process for each other. In this case, one of the students acts as the more knowledgeable other, instead of the teacher.

2.1.2 Language Learning theory

Vygotsky, however, does not explain language learning specifically, but rather the learning process in general. When it comes to language learning Stephen Krashen is a recognized name. His "Comprehensible Input Hypothesis" was published a few decades ago and it has shaped our understanding of the language learning process. In short, this hypothesis states that people acquire language through receiving messages they understand, also known under the term "Comprehensible Input" (Krashen, 1985, p. 1). The "Input Hypothesis", however, does not stand on its own, but is combined with four other hypotheses which form a theory on Second-Language Acquisition (SLA). Firstly, the "Acquisition-Learning Hypothesis" distinguishes a difference between the subconscious process of appropriating language called "acquisition", in contrast to the conscious process of language appropriation called "learning" (Krashen, 1985, p. 1). Secondly, the "Natural Order Hypothesis" states that humans generally

learn the rules of a language in a set sequence, with certain rules being learned before others (Krashen, 1985, p. 1). Thirdly, the “Monitor Hypothesis” states that a person’s foreign language production is based on their acquired language (Krashen, 1985, p1). On the other hand, learned language works as a “Monitor” that may self-correct one’s own language output, as described by Krashen (1985, p.1). Lastly, the “Affective Filter Hypothesis” states that learners have a mental filter that might either be up or down (Krashen, 1985, p.3). The filter might be “up” due to a lack of motivation, a lack of confidence or due to anxiousness, resulting in the otherwise “comprehensible language input” being blocked by said filter, and thus not resulting in language acquisition (Krashen, 1985, p.3). Krashen writes that the “Affective Filter” is down when the learner does not fear failure and feels included socially as a part of the learner group (1985, p.3). He adds a suggestion of his own that the filter tends to be the lowest when the learner is so engulfed and invested in the content of a message, that the message itself overshadows the language that it is written in, even to the extent that the message being in a foreign language temporarily becomes unimportant to the learner (Krashen, 1985, p.4). Krashen summarizes all these hypotheses in one single claim regarding second language acquisition:

People acquire second languages only if they obtain comprehensible input and if their affective filters are low enough to allow the input “in”. When the filter is “down” and appropriate comprehensible input is presented (and comprehended), acquisition is inevitable. It is, in fact, unavoidable and cannot be prevented – the language “mental organ” will function just as automatically as any other organ. (Krashen, 1985, p. 4)

Following this way of thinking, the language input itself becomes the key factor in stimulating language acquisition (Krashen, 1985, p.4). This means in turn, that any form of language input that is comprehensible to a receptive student will automatically facilitate language acquisition. Therefore, in line with Krashen’s hypothesis, language input in the form of English language in a game, as well as conversations in English during gameplay, can function as valid language input, and therefore be a means of second language acquisition for Norwegian students.

Krashen’s work has, however, been both critiqued and added onto by multiple researchers and theorists over the years. One of these researchers is Merrill Swain. She argues that language input, although important, cannot facilitate extensive language learning on its own, if the students are not given adequate opportunities for language output. She bases this on

studies on English speaking learners of French in Canada, that follow French Immersion (FI) education. FI entails that at least 50% of the school day and the courses are entirely in their second language (L2), even to the extent of some non-L2 related subjects being taught in L2 (Swain, 2000, p. 199). Swain points out that a number of studies have shown that the FI students' French, although fluent, has some distinct non-native features, especially when it comes to grammar (Swain, 2000, p. 201). This is interesting, because these students receive vast quantities of comprehensible input, but this input still fails to produce native levels of language proficiency. The author points out that the students are given comparatively few opportunities for L2 language production, which might be an explanation for the discrepancy in language (Swain, 2000, p.201). L2 production can, according to Swain, force learners of a language to reflect on whether the language they use accurately communicates their original intent (Swain, 2000, p.201). Attempting to produce foreign language may therefore reveal to a learner that they, in fact, do not know how to accurately convey their intended meaning in their second language, uncovering an opportunity for deeper learning (Swain, 2000, p. 201). Such a discovery can in turn activate cognitive processes which may lead to expansion or consolidation of the students' linguistic knowledge (Swain, 2000, p.201). In summary, Swain argues that it is of the essence that students get to use the language they are currently learning instead of only digesting comprehensible input, in order to ensure comprehensive language learning.

2.2 Oral Communication and its importance in language learning

Oral communication is, together with written communication, one of the two main forms of language production. The newest LK20 curriculum in Norway also emphasizes oral communication is an important part of the English subject, and it is one of the main aspects of English language production that students will be tested on during their education. The Norwegian Ministry of Education and Research (2019) identifies oral skills as part of the basic skillset in English (p. 4). Within this rather broad term, they include conversational skills, such as listening and talking, as well as students having the ability to present information in a manner that is suited for the audience it is intended for (p.4). Furthermore, oral skills are also incorporated in some of the competence aims after year 7 and 10.

Examples of competence aims after seventh grade are:

- explore and use pronunciation patterns and words and expressions in play, singing and role playing

- listen to and understand words and expressions in adapted and authentic texts
- express oneself in an understandable way with a varied vocabulary and polite expressions adapted to the receiver and situation
- initiate, maintain and conclude conversations about one's own interests and current topics

(Ministry of Education and Research, 2019, p. 7)

After tenth grade, certain competence aims reflect some of the same aspects as those for seventh grade, however, they entail a higher level of fluency and a more nuanced understanding of the language and its use. Some examples of competence aims after tenth grade that are based on oral communication are:

- use key patterns of pronunciation in communication
- listen to and understand words and expressions in variants of English
- express oneself with fluency and coherence with a varied vocabulary and idiomatic expressions adapted to the purpose, recipient and situation

(Ministry of Education and Research, 2019, p. 8)

Since oral communication is incorporated in the competence aims, this means that students will be tested on it in their summative assessments. Communication is, however, not only important during the exams at the end of students' educational journey, but it can also play a pivotal role in the language learning process. Foster and Ohta (2005) also support the notion of oral communication's importance in SLA. They say that receiving comprehensible input, in the form of negotiating for meaning (NfM) or otherwise adjusting language in conversational settings is key to SLA (Foster & Ohta, 2005, p. 402). The authors state that NfM can be used as a tool by students to resolve issues in their comprehension, thus making previously incomprehensible input comprehensible (p. 405). Interestingly, according to studies on what kind of classroom activities facilitated opportunities for NfM, they suggest information gap tasks with two participants (Foster & Ohta, 2005, p. 405). This is relevant for the current project, as the game used in this project is based on an information gap (Garshol & Reichelt, 2024, p.99).

Foster & Ohta (2005) also write about how NfM relates to communication failure, saying that NfM often happens when the recipient of a message indicates that the message was not (fully) understood (p.406). During the occurrence of NfM, the flow of communication is

halted, and the focus of the conversation usually shifts from meaning to linguistic form, in order to ensure a shared understanding of what is being said (Foster & Ohta, 2005, p. 406). In their own study, Foster and Ohta (2005) found that students do repair and rephrase their own language production, as well as supporting their peers in their language production, be it linguistically or semantically (pp. 424-425). These interactions are, according to the authors, often accompanied by expressions of interest and positive urging to continue (Foster & Ohta, 2005, p. 425).

2.3 Role of L1 in L2 learning

Researchers and practitioners often discuss and disagree on whether L2 should be taught through the target language or whether L1 should be used. In discussions regarding the use of the student's mother tongue in an ESL (English as a Second Language) classroom, maximizing target language exposure has been a key argument for using solely L2. This builds partially on Krashen's theory of comprehensible input that claims that, as long as the language is adjusted to being just above the student's level of proficiency, the language input itself will be a source of learning. According to Swain, increased target language exposure does have its benefits and seems to positively affect certain grammatical aspects, such as the use of verbs in the target language (2000, p. 205).

The use of L1 (the first language or mother tongue), however, also seems to be used, and doing so is not uncommon among learners. Swain, in her studies of FI students, has found three main categories of L1, used by the students even during L2 based tasks. Firstly, task progression, which means that students may resort to L1 in order to progress in a task (Swain, 2000, p.205). Secondly, the students used their L1 to discuss L2, mainly regarding topics such as finding the right vocabulary, translations, or forms in L2 (Swain, 2000, p. 206). Lastly, the students use L1 as a means of creating a pleasant working environment, as well as managing social relations with their peers (Swain, 2000, p.206). A generic example for this last category could be the students using L1 when talking about a topic that is not related to a task, but that might be relevant from an interpersonal perspective.

As learning is a social event according to Vygotsky, language plays a major role in conveying, understanding, and remembering new information. It is partly for this reason that the notion of using only English in ESL classroom has been challenged in more recent years. Instead of actively avoiding the use of the mother tongue (L1) in ESL teaching, new strategies, such as translanguaging, have emerged. Translanguaging can be defined as "the planned and systematic use of two languages for teaching and learning inside the same

lesson” (Conteh, 2018, p. 445). In translanguaging the essence is not whether there is more L1 or L2 use during a lesson, but rather how and why each language is used. So, from a translanguaging perspective a teacher might strategically use the L1 of the students to aid their language development (Brevik & Rindal, 2020, p. 948). This means that, using Vygotsky’s explanation of scaffolding, a teacher or student could potentially use L1 as a steppingstone or a tool for scaffolding. Doing so would be especially helpful in cases where students lack vocabulary or even the oral proficiency to ask questions or ask for help. In a situation where L2 is insufficient, either due to a lack of lexical knowledge or due to the complexity of a matter, L1 could therefore be used instead. This could be particularly helpful for students lacking L2 proficiency, that might otherwise not receive the necessary help to progress in their language learning.

Brevik and Rindal (2020) have studied how languages are being used by teachers in Norwegian lower-secondary classes (ninth and tenth grade). They recognize translanguaging and resourceful use of learners’ own languages in the classroom as highly relevant topics in language education. Therefore, the authors claim that the question should not be if one should incorporate other languages in the ESL classroom, but rather “how to balance target language exposure with students’ needs for other languages” (Brevik & Rindal, 2020, p. 945). The first main finding of their study was that there were large differences in the amounts of English being used from class to class, ranging from values of 97% English use all the way to only 50%, in which case vast amounts of Norwegian were used for pedagogical purposes (Brevik & Rindal, 2020, p. 945). The language practices of both the teachers and the students seem, according to Brevik and Rindal (2020), to be utility based, such as for scaffolding, referencing or explanation (p. 946). The authors also report that other researchers have found that L1 often is used during personal student-teacher communication, such as during the showing of empathy or just for general classroom management (p. 947). However, this seemed to not be the case in the Norwegian classrooms, which the researchers ascribe to the relatively high levels of English proficiency of Norwegian learners, which in many cases is sufficient for personal communication to be in English as well (Brevik & Rindal, 2020, p.947). In the classrooms where teachers used large amounts of L1 for explanation of both grammar and pronunciation, the students tended to respond in L1 as well (p. 947). Therefore, the authors argue that it is important for teachers in English Classrooms in Norway to investigate the linguistic knowledge of their students and to adapt their linguistic approach to

the needs of the students, regardless of their proficiency level (Brevik & Rindal, 2020, p. 949).

One challenge that could arise when habitually using L1 in the ESL classroom might be that students will become so used to always having the option to switch from L2 to L1 that they refuse to use L2 at all. The same problem arises if the teacher has a habit of translating everything that is said in L2 to L1. The pupils might develop a habit of not putting in the effort to understand what is said in L2, and instead just waiting for the translation that is deemed to follow afterwards. This passivity is of course detrimental to the learning process and is to be avoided to ensure beneficial language use for language acquisition.

2.3.1 Code-switching: definition, and explanations for switching.

The term code-switching is a rather well-known concept in socio-linguistic spheres, and it is a common practice for bilingual language users. The Britannica encyclopedia defines codeswitching as the “process of shifting from one linguistic code (a language or dialect) to another, depending on the social context or conversational setting” (Morrison, 2024).

Although traditionally regarded as a predominantly oral language form, researchers have also discovered instances of written code-switching in historical documents dating back to various time periods (Gardner-Chloros, 2009, p. 20). In the current project the term Code-switching will be used pertaining to any instance where a teacher or student switches from using English to Norwegian and back, during conversation. This definition is more in line with Jim Hlavac’s description of the term codeswitching. He describes codeswitching as: “a hypernym to refer to any communicative interaction which contains input from two or more language varieties (not necessarily ‘codes’ in speakers’ terms) through insertion, embedding or alternation” (Hlavac, 2011, p. 3794).

The most common variant of code-switching is switches of single words, and within this category nouns are the most common word type to be switched out (Gardner-Chloros, 2009, p. 30). However, code-switching is not limited to single words only, as any feature of a language may be loaned (Gardner-Chloros, 2009, p.30).

One reason for codeswitching is what Zimmerman (2020) calls switching to repair (Zimmerman, 2020, p. 160). She gives examples of a speaker switching from Japanese to English, after their conversational partner utters trouble in their understanding through the use of a word like “Huh” (Zimmerman, 2020, pp. 158-159). Although not giving the speaker

any clues regarding which exact words are not being understood, the word “huh” does indicate that the listener needs help to understand what is being said (Zimmerman, 2020, p. 158). To illustrate what is happening here, one could say the flow of communication and understanding was broken, and thus it needs repair. The speaker repairs the original message by repeating the turn in English instead of Japanese, in order to ensure the message is understood (Zimmerman, 2020, p. 160).

A study by Sarkis and Montag (2021) investigated lexical competition as a result of lexical accessibility and its impact on codeswitching for Spanish-English bilingual students. They found that students switching from L2 to L1 was related to the accessibility of certain words and phrases in L1 (Sarkis & Montag, 2021, p. 174). This means that students were more likely to switch languages if the lexical accessibility of certain words was high in the other language (Sarkis & Montag, 2021, p. 174). Even in instances where the students did not end up codeswitching, the high lexical accessibility of a word in one language seemed to interfere with the production of the other language, indicated by the extended time it took to produce a turn (Sarkis & Montag, 2021, p. 174). The authors explain that the high accessibility of a word in another language might complicate the cognitive process of remembering and incorporating said word in a context of using the target language (Sarkis & Montag, 2021, p. 174). When this happens and the conversational setting allows for it, the speaker may, instead of suppressing the lexical interference from the other language, switch to the other language, as a means of resolving the cognitive conflict of both languages being activated simultaneously (Sarkis & Montag, 2021, pp. 174-175).

Hlavac (2011) looks at Hesitation and Monitoring Phenomena (HMP) and how they relate to codeswitching in bilingual students’ speech in Croatia. In short, the term HMP includes any form of filled or open pause, as well as uses of so-called paralinguistic markers such as coughing or chuckling, or any other signals that precede a change in form during an utterance (Hlavac, 2011, p. 3793). A typical example of filled pauses in the English language is the use of short, seemingly meaningless words such as “Uh” and “Ehm”. In Hlavac’s study he analyzes the frequency of HMP around instances of code-switching (Hlavac, 2011, p. 37). At the same time, he aims to identify if the HMP are evidence of trouble in accessing or producing language on the speakers’ end, or if the HMP are simply used to make code-switches more intelligible for the recipient (Hlavac, 2011, p. 3793). The study found that most HMP occur before code-switching, and that they are used not primarily as indicators for

linguistic errors or lexical trouble, but rather as tools to increase comprehension of the switches (Hlavac, 2011, p. 3804).

Code-switching is an interesting and relevant topic for the current thesis, because it might presumably explain most, if not all of students' use of L1 during gameplay. The game itself is entirely in English and the students were instructed to speak English. So, investigating the students' motives behind the use of L1, in the light of code-switching theories and research, might provide some insight which could possibly defend the use of L1 as a tool for learning.

2.4 Games/ Gaming and Learning

2.4.1 Different kind of games

The terms “games” and “gaming” and their implications can be understood differently depending on one’s experience with them. It is therefore important to beware of the different kinds of games and/or gaming that exist. Skaug et al. (2017, pp. 8-9) describes three main categories of games that could be used in the classroom. These are commercial games, learning games and gamification. The original document is in Norwegian so any of the references used here are my personal translations.

Commercial games are games with entertainment for the player and earning money for the developers as their original purpose. These include but are not limited to digital games on PC, consoles, or phones, as well as board games and card games. The game “Keep talking and nobody explodes” that was used in the research for this thesis falls under this category of games. A challenge with using commercial games is that the learning aims in such a game might have limited relevance to the curricular aims of a school subject (Skaug et al., 2017, p. 9).

Learning games on the other hand were created with an educational purpose in mind. In such games the main emphasis is on the learning aspects of the gameplay, not on the entertainment value. A typical objection against the use of learning games is that the over-emphasis on the pedagogical aspects of the game, makes the gameplay itself not engaging enough for the students (Skaug et al., 2017, p. 8).

Lastly, gamification is when one takes aspects of a game, such as competition and/or point scores or rewards and incorporates them into a learning activity. A popular example of this in the Norwegian Educational system is Kahoot. Gamification receives a lot of the same criticisms that learning based games do, and it often seems to build too much on external motivation or simple reproduction of facts (Skaug et al., 2017, p. 9).

2.4.2 Games and language learning

Although games and language learning as a research field is rather new, there has already been conducted quite some research on the matter. Sylvén and Sundqvist (2012) have found empirical evidence that supports a correlation between frequent gaming and increased English proficiency for Swedish learners of English. This study done on 5th graders in Sweden found that students that used more time on gaming during their spare time scored

higher on English vocabulary tests and national tests (Sylvén & Sundqvist, 2012, p.312 & 314). The same study also found a tendency where boys preferred online multiplayer games, and girls preferred offline singleplayer games (Sylvén & Sundqvist, 2012, p.311). This is relevant because in this study the boys outscored the girls in almost every aspect of the tests (p. 315). The authors think this might have to do with the playing of online multiplayer games requiring more active language use and interaction with the language, but they advocate against overgeneralizing these findings as their sample group was rather small (Sylvén & Sundqvist, 2012, p. 314-316).

Brevik (2016) conducted a qualitative study on Norwegian upper-secondary vocational students that performed very well in the English subject, regardless of poor performance in Norwegian, their mother tongue. All five informants on this study reported they spent more than three hours playing online games each day, using predominantly English while doing so (Brevik, 2016, p. 17). During their spare time the boys also watched both films and TV in English, however these activities require much less interaction with the language and are therefore categorized as more “passive approaches to language and learning” (Brevik, 2016, p.21). Online gaming on the other hand requires much more active interaction with the English language in the form of chatting, both orally and written, as well as understanding and following game instructions (Brevik, 2016, p. 21). Therefore, the author ascribes the increased English proficiency of the boys to the active use of English during gaming (Brevik, 2016, p.21). Brevik does, however, emphasize that games must require the player to actively interact with language in order for them to actually aid language development (2016, p. 21). Another interesting finding from this study is that the boys themselves did not recognize the educational relevance of the English language used during gaming (Brevik, 2016, p. 22). Although Brevik does not directly advocate for incorporating gaming in the classroom, she does encourage teachers to show a genuine interest for students’ use of English during leisure activities, such as gaming, and converse around it in a positive manner in the classroom, which in turn might positively influence students’ motivation for learning inside the classroom. (Brevik, 2016, p.22).

Based on these findings of both Brevik and Sylvén & Sundqvist it seems that games and (online) interaction with language in a gaming-setting might be a natural source of comprehensible language input for learners of English. However, in order to solidify this assumption, one should investigate both the amount and the kind of English that is used during gameplay. This is one of the main premises of this current thesis and its content.

The previous examples all pertained to extra-mural (outside of a classroom setting) gaming. Silseth (2012), however, used a game in a classroom setting for game-based learning (GBL). The game was about the Israel-Palestina conflict and the goal of playing that game was for the player to get insight in the multivoicedness of said conflict, and for them to reflect on personal challenges different actors and victims of the conflict might face. In the game the player has to talk to pre-programmed NPCs (Non-Player-Characters) and collect quotes in order to write an article that accurately reflects the different sides of the conflict. The gameplay makes for a realistic learning environment that might even be perceived as authentic by the learner (Silseth, 2012, p.80). Regardless, Silseth stresses that the teacher played a major role in helping the students reflect, as well as helping the students' making sense of their in-game experiences (Silseth, 2012, p. 80). He points to episodes during the gameplay where the teacher redirected the students and helped them by connecting in-game information to the relating real-life issues (Silseth, 2012, p.81). It was the teacher that helped the students to progress from not even being able to write an article in the first mission, to the students both understanding and being able to write an article about the different perspectives on the conflict, voiced by the NPCs in the game (Silseth, 2012, p. 81). Even in the post-game discussions the teacher has the students refer to in-game stories told by the NPCs, again linking the students in-game experiences to the related real-life situation the game is based on (Silseth, 2012, 81). These findings show that playing the game itself was not enough for the students to fully reach the intended learning outcomes without adequate support and guidance from the teacher. In his closing remarks, Silseth suggests that it is important to investigate how teachers, by working together with the students, may make a computer game a useful means of reaching certain learning aims and goals. (Silseth, 2012, p.82). This in turn, according to Silseth, will provide more insight into GBL and its successes and failures (Silseth, 2012, p.82). Although the premise of the game used in Silseth's project was learning about the Israel-Palestina conflict, even this game had indirect language learning benefits, especially in the form of understanding the in-game NPCs and producing written text. Silseth's project, however, does not provide any specific data on the language learning outcomes of playing that game. The game used in the present study has, contrary to Silseth's game, no desired learning outcomes that are content related. This allows for solitary a focus on students' language input and output during gameplay, and thus investigating the game's relevance for language learning in the classroom.

2.4.3 Games and how the human brain works.

James Paul Gee, an American Linguist and recently retired professor and researcher at the Arizona State University, has been involved in research on games and learning for over a decade. He draws an interesting comparison between the development of new technologies, and how they impact or even reflect the human mind and our understanding of it (Gee, 2013, p. 15). He presents examples of this throughout history in his book “Good games + Good learning”. He mentions the idea of the mind being like a slate that is empty from birth and that is filled in through experience (Gee, 2013, p.15). This particular idea and representation of the mind was originally conceived by Locke and Hume and is still used by people today. The understanding of the mind being an empty slate, Gee argues, is clearly influenced by technology connected to literacy (Gee, 2013, p. 15). He then goes on to mention a newer school of thought, embraced by some modern scientists, that argues that the mind is more like a computer which “calculates generalizations and deductions via a logic-like rule system” (Gee, 2013, p.15). Others, on the other hand, argue that the mind works as a network of connections between recorded experiences, similar to how an internet network operates (Gee, 2013, p.16). These ideas are in varying degrees influenced by the modern data technologies of computers and networks, such as the internet.

Gee, however, presents the idea of comparing the human mind and its working to another relatively new technology, namely a videogame. He states that video games offer a new way of approaching the human mind and that they allow us to even externalize some of the functions of it (Gee, 2013, p.16). To support this claim, he references studies from cognitive science, specifically Barsalou and Glenberg’s work. Gee extrapolates from their work that the mind is not solely a concept storing warehouse or a philosopher that only works with abstract rules. Instead, humans seem to have an ability to simulate reality and experiences in their head, with the purpose of finding the course of action needed to achieve certain goals (Gee, 2013, p.16). With such an understanding of the mind there is a strong metaphorical likeness between playing certain video games and the simulation that happens on a cognitive level (Gee, 2016, p.17). In the kind of games Gee is referring to involve a world that is both visual and auditory. The player gets to manipulate this world by influencing the landscape and the characters, all the while making choices that allow for certain actions and disallow for other actions, of course with their respective outcomes (Gee, 2013, p. 17). This process of gameplay, Gee argues, is very similar to the simulations that happen in a human mind when thinking through a particular situation and simulating different outcomes. This way of

thinking emphasizes the human role as an actor, one that can influence the world and modify their reality through their actions, with the aim of achieving certain goals one has set for oneself (Gee, 2013, p.18). For students, viewing oneself as an actor, where their actions have consequences for the future fits in very well with the first paragraph of the educational act, which states that:

The pupils and apprentices must develop knowledge, skills and attitudes so that they can master their lives and can take part in working life and society. They must have the opportunity to be creative, committed and inquisitive. The pupils and apprentices must learn to think critically and act ethically and with environmental awareness. They must have joint responsibility and the right to participate. (The Educational Act, 1998, §1.1)

Following this Gee's reasoning certain games might become tools for students to shape their perception of the real world and of themselves as actors in it. Such games might then become an arena for students to both practice and experience autonomy, which is one of the core psychological needs of any individual according to Ryan & Deci (2020, p.1). Another psychological aspect to the type of games that Gee talks about can be related to the individual's need for competence (Ryan & Deci, 2020, p.1). This is realized by the game allowing for choices, which Gee (2013) calls for "Affordances", the results of which give benefits or restrictions to the player (p.17-18). Students may, in the context of the game, experiment with different choices and paths with their respective outcomes, without the risk of life-long repercussions that could ensue, be they real-life decisions. This means that the player gets to act before they have the proper competence, and thus through practice in a safe environment acquire said competence (Gee, 2013, p.19-20) In a way, the game then becomes like a testing ground for the player, where they can safely explore personal agency, and learn about the connection between choices, decisions and the accomplishment of personal goals (Gee, 2013, p.18). This could make integration of such games in education relevant both as a means of supporting students psychological needs, as well as serving as a training ground for students' personal development as active agents, both in their own life and in society.

2.5 Motivation and self-determination as key aspects and important factors in learning
Motivation means "to be moved to do something" (Ryan & Deci, 2000, p. 54). Motivation is different from person to person, not only in quantity (how motivated one feels on a scale), but also the type of motivation may differ (Ryan & Deci, 2000, p. 54). The two main types of

motivation are intrinsic and extrinsic motivation, where intrinsic motivation pertains to activities that are inherently interesting to a person, while extrinsic motivation is based on a certain outcome that is not solely related to said activity (Ryan & Deci, 2000, p. 55). Ryan and Deci argue that it is plausible that intrinsic motivation is both the driving factor in, and best explanation for continuous human learning throughout our entire life, much more so than any externally imposed form of learning or motivation (Ryan & Deci, 2020, p. 2). For the other category of motivation, extrinsic motivation, the authors make a distinction between two forms of extrinsic motivation that exist. Classic extrinsic motivation is where a student acts a certain way, because someone or something outside of themselves drives them to it, for example the promise of a good grade on a test (Ryan & Deci, 2000, p. 55). Another form of extrinsic motivation, however, is when the student willingly accepts a task, due to a recognition of the utility-based value of said task (Ryan & Deci, 2000, p. 55). This involves a voluntary choice of the student to internalize an external goal as a personal aim and motivator (Ryan & Deci, 2000, p. 55). Learning how to foster motivation, especially the previously mentioned integrated extrinsic motivation, is key for an educator, due to the innately uninteresting nature of many of the learning tasks that are typically employed in teaching settings (Ryan & Deci, 2000, p.55).

Ryan and Deci (2020, pp. 1-3) also write about Self-determination theory (SDT) as a means of comprehending what might benefit or hamper motivation, both intrinsic and extrinsic, in educational settings. Self-determination theory can be used as a tool to further unpack these different forms of motivation and how they may impact learning. In short, self-determination theory builds on the assumption that humans have a natural inclination “toward psychological growth and integration, and thus toward learning, mastery and connection with others” (Ryan & Deci, 2020, p. 1). They explain that these natural inclinations, however, do not infer an automatic process, as their solidification is dependent on adequate support. According to the authors, an individual has three main psychological needs that, if met with proper support, can facilitate healthy personal development. They also state that the first need is the need for autonomy which is related to the individual experiencing personal ownership and responsibility (p.1). Autonomy is strengthened when the interests and values of the individual are both validated and incorporated (Ryan & Deci, 2020, p.1). On the other hand, autonomy might be undermined through the exercising of external control, which typically comes in the form of punishment or reward (Ryan & Deci, 2020, p.1). The second term that Ryan and Deci (2020, pp.1-3) mention is competence, which pertains to the individual’s experience of mastery, bolstering an expectation of growth and future success. They state that this need is met by

providing the individual with appropriate challenges, supplied with giving them feedback and opportunities for further development. Lastly, the term relatedness implies the individual feeling connected and being associated with. This need is met mainly through the showing of care and by the utterance of respect (Ryan & Deci, 2020, p.1). When viewing educational settings through the lens of SDT, the main focus becomes identifying how these three basic psychological needs of the individual are met or frustrated (Ryan & Deci, 2020, p.1). Later in the same article, the authors also state that the meeting of these needs through adequate support has shown clear and positive influences on students' school outcomes (Ryan & Deci, 2020, p. 3).

With regards to motivation in the classroom environment, SDT has two main hypotheses that are supported by many different studies (Ryan & Deci, 2020, p.3). These two hypotheses are:

- (a) more autonomous forms of motivation will lead to an enhancement of students' engagement, learning, and wellness; and
- (b) that basic psychological need support from both teachers and parents facilitates such motivation, whereas need thwarting undermines it (Ryan & Deci, 2020, p.3)

When analyzing teacher's support for students, Ryan and Deci (2020) use the terms "autonomy support" and "structure", which they explain as support that satisfies both the needs for autonomy and relatedness (p.3). A student autonomy-supporting teacher shows interest in the perspectives of the students and tries to respond to them (p.3). Such a teacher allows for the students to take ownership of their learning, and can even let the students take the initiative when it comes to their learning process, by giving them impactful choices to make and providing them with tasks that cater to the students' interests (Ryan & Deci, 2020, p. 3). If the students are under the impression that they are given a meaningful choice by their teacher, they show a higher degree of ownership towards their learning activities, as well as increases in performance, curiosity and intrinsic motivation, (Ryan & Deci, 2020, pp. 3-4). When it comes to structure, SDT separates structure from control, where control is regarded as the negative influence of forcing students towards a desired behavior or achievement (p.4). Structure, on the other hand, is about setting clear expectations and consistent boundaries, while giving both support and feedback (Ryan & Deci, 2020, p.4). Such structure can scaffold the students' learning process in a manner that sets up the students for success, resulting in more opportunity to provide the students with positive feedback, which in turn can strengthen the students' efficacy (Ryan & Deci, 2020, p.4). Studies show that combining autonomy support and

structure results in an increase of both intrinsic and internalized external motivation, an increase in employment of self-regulated learning strategies, and even a decrease in anxiety (Ryan & Deci, 2020, p.4). Such structure also has the potential to meet the students' competence related needs, however, this is dependent on combination of structure and autonomy support, as a lack of autonomy support might mean that the structure is in fact control-based, which fails to produce the desired outcomes (Ryan & Deci, 2020, p. 4).

Ryan, Rigby and Przybylski (2006) study the correlation between computer games, motivation and SDT. They investigated which factors drive people to play games, and how these motivations may differ depending on the game at hand, as well as studying the influence of in-game accomplishments on the players' "short term well-being" (Ryan et al., 2006, p. 360). The researchers studied the extent to which games can satisfy the psychological needs of the individual, as described in SDT, and they expected that this might be related to the public's general interest in games (pp. 360-361). They found that single player gameplay catered to experiences of both autonomy and competence, while multiplayer gameplay supported all three of SDT's psychological needs (Ryan et al., 2006, p. 361). Furthermore, the intuitiveness of game controls directly correlated to the game's ability to satisfy the player's need for competence (Ryan et al., 2006, p. 361). They found that more intuitive game controls lead to more experiences of competence for the player, increasing both the levels of enjoyment and the likelihood of the player wanting to play again in the future (p.361). When it comes to the effect of games on the well-being of the player on a short-term basis Ryan et al. (2006) also had some interesting findings. Exposure to games tended to result in energy drain and signs of fatigue, meaning that the vitality of the players was negatively impacted (p. 361). However, the authors state, for players that experienced autonomy and competence during gameplay, the majority of short-term gameplay-related outcomes seemed to be of a positive nature (p. 361). That being said, the authors warn that the current study does not investigate the long term effects of gaming, such as the possible development of addiction or aggression related issues (Ryan et al., 2006, p. 361). On the other hand, the findings do indicate that the effects of computer gaming on well-being might not be solely negative (p.361). The authors argue that the extent to which an individual is able to satisfy certain personal needs through gameplay might, in fact, be regarded as a positive short-term effect on well-being (p.361). In the process of investigating gaming's impact on well-being, it is therefore important to have a nuanced understanding of the different aspects to a game, and how these aspects may have either a positive or a negative effect on the player's well-being (Ryan et al., 2006, p. 361).

2.6 Relevance of my project for the field

This study aims to contribute to the research field by analyzing spoken language during gameplay, in a Norwegian lower secondary school setting. There are currently no studies to my knowledge that have investigated this topic in this particular setting. The setting in studies as this one is important, as educational systems can vary to a large degree, depending on the country, the age, and the study sample. This means that findings from studies conducted on different ages groups, or studies done in other countries might have limited to no transferability at all to a Norwegian lower secondary school setting.

The scope of this study is narrow and rather specific. It could, however, still be relevant in identifying trends, areas, or themes for further research. Its findings may also be used by teachers as input for their reflection process around their own teaching practices and use of digital tools and games in the classroom. Lastly, the findings might indicate points of interest for a teacher to consider if they were to use “Keep talking and Nobody Explodes” specifically and implement it as a part of their own teaching.

3.0 Methodology

3.1 Methodological approaches

The research questions of this project could be answered in a number of varying ways. However, there are two main categories which all of them fall under, being quantitative or qualitative approaches. A quantitative approach could entail surveys, which could be sent out to both teachers and students all around Norway, asking about their habits around language use during gaming. Therefore, given that the number of participants is high enough, the sample could be representative for an entire population, and the findings of the study could have a high validity and generalizability. One of the main weaknesses of using quantitative approaches such as surveys, however, is the lack of nuances and the fact that they rely heavily on self-reported data. The challenges regarding self-reported data are connected to a potential lack of self-awareness in the respondents, as well as externally imprinted or even internal biases, which may lead the respondents to giving the “expected” or most politically correct answers, instead of answering honestly.

A qualitative approach such as teaching interventions or observation is another approach to answering the research questions and will result in different data. The strengths of a qualitative approach lie in the in-depth study and analysis of the topic at hand. Qualitative studies allow for the inclusion of participants’ experiences, as well as allowing the researcher to explore a theme or topic (Creswell & Guetterman, 2021, p. 40). Another benefit of qualitative research designs is that one does not need to know and define all of the variables and parameters of the study beforehand (Creswell & Guetterman, 2021, p. 40). The main drawbacks of the qualitative approach are that it can be time-consuming and therefore close to impossible to do on a scale that is large enough to result in broadly generalizable findings. In addition, there are limitations to how much data a single researcher is able to pick up on and process during a qualitative data collection process. Therefore, using a recording device to record video and/ or audio material can be of tremendous help, as rewinding and replaying certain episodes may help the researcher pick up on details which otherwise would be lost. Because a qualitative study includes sample specific information and factors, the results of such a study might have a limited generalizability for student groups outside of the one that was studied, and therefore they will often require further research to confirm their validity on a more universal basis. This is especially true when extrapolating the findings of a qualitative study, in order to find implications for other student groups with differing ages, different nationalities, or even cultural backgrounds than the original sample included in the study.

A third approach is combining both quantitative and qualitative aspects into a mixed-methods design. This could help alleviate some of the above-mentioned challenges with both approaches and thus give a fuller picture and a dataset that more closely reflects the reality in the classroom. In theory, the proper mixed methods design takes the best of both worlds, playing on the strengths and benefits of both quantitative and qualitative research. The main challenge with the mixed-methods design is that it can become very time consuming and conducting a full-scale mixed methods study has a risk of taking too long and becoming far too content intensive for one master thesis.

3.2 Chosen Methodological Approach

The data collection method I landed on is analyzing audio recordings of students playing a game in the classroom, which were recorded during an action research intervention belonging to an ongoing research project, called “Gaming in the classroom” by Garshol & Reichelt Føreland (2024). The reason I chose to work with these recordings is that they feature Norwegian 8th and 9th grade students, who play a game in the ESL (English as a Second Language) classroom, which is the exact data that my RQs require. This data set allows me to quantify the amount of time spent speaking English or Norwegian during gameplay, while also analyzing what kind of information is conveyed in each language, as well as analyzing other relevant aspects of the conversation. Another benefit of using recordings is the ability to rewind and re-listen, ensuring that I will not miss any part of the conversations.

I will analyze six audio recordings (three recordings from eighth and three from ninth grade) of groups of students playing the game “Keep talking and nobody explodes” during an action research intervention done by Garshol & Reichelt Føreland (2024, p.99-100). All of the audio-material used in the current project was already collected as a part of Garshol & Reichelt’s project. The entire data collection process was conducted according to the guidelines set by the Norwegian Agency for Shared Devices in Education. In this project a sample of Norwegian lower-secondary students got to play a game called “Keep talking and nobody explodes.” This game can be categorized as a cooperative puzzle game, where one player sees a bomb with various components to disarm, and another player has access to a bomb-defusal manual (Garshol & Reichelt Føreland, 2024, p.99). The game is based on an information gap, so the players need to inform each other, and ask questions in order to successfully defuse the bomb (Garshol & Reichelt Føreland, 2024, p.99). The defusal manual and the game itself are entirely in English, meaning that the entire gameplay loop facilitates

for, and frankly requires, the students to use the English language. Another benefit of using this game is its availability on multiple platforms such as IOS and Android tablets, as well as Windows, Mac and even Linux if one uses a USB (Garshol & Reichelt Føreland, 2024, p.99).

The total data set from the action intervention has been collected in three eighth grade classes and four ninth grade classes in a Norwegian lower-secondary school (Garshol & Reichelt Føreland, 2024, p.100). However, the current project only used recordings from one of the eighth grade and one of the ninth-grade classes, due to time and word restrictions for the master thesis. During the intervention, the students were put into groups of two to three participants and given access to the game on an iPad (Garshol & Reichelt Føreland, 2024, p.99). Recording devices were placed on the table with each group, which recorded the conversations during the game.

I have decided to choose three recordings from eighth grade and three recordings from ninth grade to analyze. The only factor that played into choosing which recordings to use was that I wanted an approximately even balance of boys and girls. The eighth-grade recordings feature two groups with two boys each and one group consisting of three girls. The ninth-grade recordings feature one group with two boys, one group with two girls and a mixed group consisting of one boy and one girl. One reason for gender being a factor in my selection of the recordings is related to the previously mentioned findings of Sylvén & Sundqvist (2012), where they found that boys and girls liked different games and had different levels of English proficiency. Therefore, I wanted to make sure I had data from both genders, in case there were large differences between them. Otherwise, the selection of the groups for transcription was random in order to avoid prejudices or selection based on my perception of their English proficiency.

Content-wise, the recorded material consists of the conversations the students are having while they are playing the game in the classroom and cooperating to solve it. Each recording lasts for approximately one entire English lesson, which is around 45 minutes. That means that the total length of the recordings used in the current project amounts to just over four hours.

3.2.1 Explanation of the game “Keep talking and nobody explodes.”

3.2.1.1 *Explanation of the game mechanics*

The game is a game that builds on solving a puzzle through cooperation with another person. The puzzle is in the form of a bomb with a detonation timer, and various tasks on it, which the player who plays as the bomb-defuser has to solve successfully, in order to defuse the bomb and win the game. During gameplay one player sees the bomb and the tasks on it and another player has access to a defusal manual which is entirely in English. The player with the bomb needs to accurately describe what they see. With this information the player with the defusal manual can give instructions on what to do. The whole process demands active oral communication with questions and answers going back and forth, as defusing the bomb without cooperation is close to impossible. For the player with the defusal manual there is also an additional linguistic aspect of having to read and understand written English, before deducting a course of action for the other player.

The game is available for Android and iOS tablets, and through the use of a USB drive it can also be played on computer platforms such as Windows, Mac, and Linux. There is even a VR version of the game available, but this was not used in the current project.

3.2.1.2 *Why this game was used for this project*

When it comes to deciding on a game for a research project, there are multiple factors to consider. The first being availability and accessibility. “Keep talking and nobody explodes” is a commercial game that can be bought directly in the Apple Appstore or the Google Play store, or one can buy sets of licenses for that can be used across classrooms. In the current project, the researchers Garshol and Reichelt-Føreland (2024) financed the licenses themselves. The game is playable on tablets (both iOS and Android) and, if transferred through USB drives, on computer platforms, such as Windows, Macintosh and Linux (Garshol & Reichelt Føreland, 2024, p.99).

Secondly, and more importantly, the content and the premise of the game were a large part of the decision for its use for this project. The game software is in English and the defusal manual is entirely in English and gameplay requires oral communication and reading written English. This means that playing this game naturally stimulates English language production. The addition of the time pressure through the timer, and the bomb exploding when it is not successfully defused, both add the necessary amount of stress for the gameplay to feel challenging and engaging. Also, the game offers many degrees of difficulty and many

different tasks to be solved. This means that any student should find a level of difficulty that is challenging enough without becoming impossible to manage. This option of adapting to the students' level and needs is vital in Norwegian classrooms as Norwegian students have a right by law to have their education be adapted to their competence and needs.

Garshol & Reichelt Føreland (2024) also report that students that took part in this intervention filled out a survey afterwards, where they said the game was fun and that they spoke more English during the playing of this game than they normally would in class (p.101). During the action intervention, the students were not initially given detailed instructions regarding the solving of each of the tasks during gameplay, which led to some students reporting that the process of working out the tasks while using English was complicated and stressful (p. 101). Interestingly, although there were students that admitted the game was hard, these same students also reported that they would be interested in playing the game again in class (p.101).

3.3 Chosen method for data analysis

All of the recorded material used in this study was transcribed in NVivo, a transcription program used on license through UiA (University of Agder). The transcribed text was analyzed using content analysis as described in (Cohen et al., 2007, pp. 476-483). Using content analysis allows for systematic and verifiable analysis of text, while focusing on language and meaning in context (Cohen et al, 2007, p. 475). According to Cohen this form of analysis can be used for both qualitative and quantitative analysis of texts (2007, p. 476), meaning that it can answer all of my RQs.

As a part of the content analysis the transcriptions were coded, and figure 1 shows the two main coding categories for language use, with their respective subdivisions. In addition, a secondary set of codes was created to categorize signs of mastery, help being offered and signs of negotiating for meaning. These are shown below in figure 2. Every single line (conversational turn) in the recordings was coded with one of the codes belonging to the main coding set. In addition, the same lines would be coded with codes from the secondary set if the correct conditions applied, i.e. if a language related line also contained a sign of positive mastery, that line would be coded with both "Game-related communication" and "Positive Mastery".

The analysis includes both qualitative and quantitative aspects, as the research questions require answers to both the amount of English language used, as well as the nature of the language that is used during the gameplay.

Figure 1

Main coding categories for content analysis of language use in the recordings



Figure 2

Secondary coding categories for content analysis

Mastery	Help	Follow-up questions
<ul style="list-style-type: none"> • Positive • Negative 	<ul style="list-style-type: none"> • Teacher-Student • Student-Student 	<ul style="list-style-type: none"> • Negotiating for meaning • other

3.3.1 Explanation of the codes

“Reading Instructions” includes any instance where a student reads out a sentence from the manual or on the screen. The code “Game-related communication” is the broadest of the entire code set and entails all forms of communication during gameplay that are relevant to the gameplay loop. This includes questions about the bomb, the software, and the manual; descriptions of the bomb or whatever is seen on the screen, as well as directions or requests given to either player regarding a course of action. Language related communication, on the other hand, is comprised of any questions or comments on vocabulary or requests for elaboration or clarification. Non-game related communication is all of the communication

that is not relevant to the gameplay and also does not meet any of the requirements from the language related communication label.

The codes pertaining to use of the students L1 Norwegian specifically, have a clear overlap with the previously mentioned reasons for L1 use, as mentioned by Swain (2000, p. 205-206). The code “game-related communication” is related to using L1 as a means to progress with the task at hand. While language related communication builds on Swain’s notion of students using L1 to discuss L2 (Swain, 2000, p. 206). And lastly, the non-game related communication accommodates for L1 use that is not related to the task and might have purposes more related to management of interpersonal relationships.

The secondary set of codes is not directly related to language use, but rather to other points of interest that are more broadly relevant to a classroom situation. The code “Mastery” with the subcodes positive and negative is used for instances where the students comment on succeeding (positive) or failing (negative) or the overall difficulty of the game. The category “Help” includes Any requests for help and any time a teacher helps a student, or a student helps another student. Lastly, the category “Follow-up” is used when a student asks a follow-up question or ask for elaboration or clarification. When the nature of the follow-up question is based on language and properly understanding what is being said, the code “negotiating for meaning” is used.

3.4 Reliability and Validity

There are a few considerations to be made regarding the reliability and the validity of the present study. Firstly, the sample size is very small indeed, as only two classes from one school in southern Norway are included. This is mainly due to the word limit on this master thesis, as well as the in-depth nature of this project. The small sample size implicates a limited generalizability of the findings of this project. However, the patterns and tendencies this project identifies could open new areas of further research, as well as giving teachers who are considering implementing a game in their classroom a few points of reflection. On the other hand, the small sample size does allow for thorough data analysis, which strengthens the reliability of the findings.

There are also some aspects of the data collection method that are worth mentioning here. The data was recorded through an action research project, where researchers that were unknown to the class beforehand came in and did an intervention (Garshol & Reichelt, 2024).

The presence of unknown people in the classroom might have had an influence on the language the students used and therefore possibly skewed the data. Furthermore, the students were instructed to speak English during the game, so the dataset might not reflect the normal state of affairs in said classroom. The students were also aware that they were being recorded by a device on their table, which might have influenced both the language being used, as well as the students' inclination to keep on trying and not to drift of topic.

Lastly, classroom culture and social relations in the classroom can heavily influence foreign language production in a classroom. Thus, the findings of this study will very accurately reflect the culture of the particular classroom involved in the study. However, this further reduces the generalizability of the findings in the present study, especially across country borders, as even the Norwegian school system itself differs from many other countries. One might to a degree be able to extrapolate the findings of the present study with some validity for other classrooms in southern Norway. Although, due to the requirements around privacy, it would be close to impossible to describe the sample classroom to a sufficient degree that would facilitate a fruitful comparison of classroom cultures and social habits.

3.5 Ethical considerations

There are a few ethical considerations which one should account for with an action research intervention such as the one presented in this thesis.

The first ethical issue is connected to privacy and protection of personal information. As the project includes recordings of pupils speaking, and the sample group is from one school, it is of the utmost importance that their identities are concealed to avoid recognition. This is achieved in the present study through complete transcription of the audio recordings, as well as non-disclosure of the specific school the students attended.

Another point of interest is the use of a real classroom, where external researchers come into a classroom with its own established culture and take up some of their time for the data collection. It is custom to thank the participants and reward them somehow for their time and their provision of data for research purposes. One way of doing so is giving the classroom or the entire school in question a briefing on the findings after the project is over, as a form of thanks and compensation for the time used on the project.

A last ethical notion is related to the game itself, although it was not relevant for the student group in the current project. There might arise issues related to the fact that one plays with a bomb. Depending on the selection of students in the classroom this could prove to be problematic if a student has traumatic experiences or connotations to bombs. This might be due experiences connected to 22nd of July, the day that Norway experienced a terrorist attack or even due to some students possibly being refugees of war, especially with regards to the situation involving Russia and Ukraine today. As stated, there were no problems with the classes in this project, but as a teacher it is wise to be aware of the emotional baggage certain students may carry with them. This can help to avoid accidentally triggering an unexpected response.

4.0 Results

4.1 English and Norwegian during gameplay, amount, and content

In this chapter, the sentences from the transcriptions will be referred to as conversational turns because the vast majority of them are not full sentences, so using terms such as sentences or lines as a measuring tool would therefore be an inaccurate representation of the language used during the gameplay. One conversational turn can be all from a few words to multiple sentences in length, depending on how much one student speaks before another student does.

Regarding the structure of this section, the results of the quantitative analysis of language used in the turns are split into eighth grade and ninth grade. This is due to there being a few differences in language use between the classes, especially in the subcategories such as non-game-related communication. For the other topics, however, there were no major differences between the classes, therefore the other findings are not divided by grade.

4.1.1 Eighth grade use of language

There were altogether $n=1699$ conversational turns in the three recordings from the eighth-grade classroom. Out of these, $n=1554$ were completely in English, $n=84$ turns were completely in Norwegian and $n=61$ contained both English and Norwegian. This means that 91.5% of the language spoken during the game was in the target language, 4.8% was in the mother tongue, and 3.7% contained both languages in the same turn.

Closer analysis of the conversational turns that contained English language shows that 45 turns (2.9%) were simply students reading the instructions in the manual aloud. 1445 turns (93.0%) were game-related communication and 17 turns (1.1%) were language related communication. 47 turns (3.0%) were unrelated to both the game and the language. One interesting observation regarding the reading of instructions is that these lines generally included full sentences with proper grammar and structure, sometimes in stark contrast to the other conversational lines around it. Example (1) shows a turn where a student read from the manual and (2) shows a sentence that was not just read aloud, and that more closely reflects the average spoken “sentence” during the conversations.

- (1) B2: Hold the button and refer to releasing a held button. If the button is blue and the button says abort, hold the button and refer to releasing a held button. (9th boys 7 L133)

(2) B2: Inside a panel...I have like small squares and then it's a green ring and it's a...
green ring and a... eh... (9th boys 7 L199)

For the conversational turns that contained Norwegian, n=53 turns were game-related. N=7 turns were language related communication and n=24 were related to neither. Any quotes in this paragraph that were in Norwegian originally have been quoted as they were in Norwegian, with the English translation directly below it. It is hard to identify a universal pattern as to why Norwegian was used for many of the game-related turns. However, there seem to be some instances where the use of Norwegian could be ascribed to uncertainty on the students' end, such as (3) and (4). Other times game-based communication is connected to commenting on the gameplay itself, especially in between rounds, shown in (5) and (6). The group of girls (8th girls 8) in particular seemed to switch back to Norwegian in between rounds very consistently, even though they spoke only English during gameplay. The seven language related turns were mostly questions regarding English vocabulary and translation, as in (7) and (8).

(3) B2: Det gir ikke mening. (8th boys 2 L123)

EN: It does not make sense.

(4) B1: Nei, jet vet ikke... Jeg skjønnte ikke. (8th boys 2 L126)

EN: No, I don't know... I didn't understand.

(5) G2: Vent, kan jeg gjøre en gang til? (8th girls 8 L139)

EN: Wait, can I do it one more time?

(6) S2: Ok, den var litt vanskelig, prøv en gang til da. (8th boys 3 L105)

EN: Ok, that one was a little hard... try again though.

(7) G2: Jeg mener spørsmålstegn. Hva kaller man det? Hva heter det på Engelsk? (8th girls 8 L51)

EN: I mean question mark. What do you call that? What is that in English?

(8) G2: Hva betyr det? (8th girls 8 L165)

EN: What does that mean?

In contrast to the ninth-grade recordings, the eighth-grade recording contained more turns that were completely unrelated to both the game and the language. Food and expression of emotions were the main themes that were discussed here. The quotes (9), (10) and (11) are examples of food related turns, while (12) and (13) show expression of emotions. This shows that on average the eighth-grade students did not manage to stick to the task as well as the

ninth-grade students. This current project does not have enough data points to fully support a claim regarding and explanation for this difference. When seen in context of the conversation, however, one might assume that a lack of experienced mastery, which was followed by reduced motivation, could be one of the reasons for the students going off topic. The quotes (14) and (15) show a specific instance of the students making a mistake, followed by the students drifting off topic by starting to talk about how hungry they are.

(9) B2: Er de hjemmelagde? (8th boys 2 L378)

EN: Are those homemade?

(10) B1: Må alltid dyppe i rømme. (8th boys 2 L410)

EN: Must always dip in cream.

(11) B1: Nå har jeg ikke mer nacho chips. (8th boys 2 L451)

EN: Now I do not have any more nacho chips.

(12) G2: Det var litt kjedelig, man gjør jo det samme om og om igjen. (8th girls 8 L454)

EN: It was a little boring. You just do the same thing again and again.

(13) S1: Hva i alle dager? (8th boys 3 L81)

EN: What in all days? (direct translation of a typical Norwegian exclamation of disbelief)

(14) G1: Ok... I don't understand this! It's very, very weird. Now we have to take a break, I cannot do this anymore. (8th girls 8 L450)

(15) G1: Å jeg er så sulten! (8th girls 8 L451)

EN: Oh, I am so hungry!

4.1.2 Ninth grade use of language

There were altogether n=1504 conversational turns in the three recordings from the ninth-grade classroom. Out of these, n=1418 were completely in English, n=65 turns were completely in Norwegian and n=21 contained both English and Norwegian. This means that 94.2% of the language spoken during the game was in the target language, 4.3% was in the mother tongue, and 1.4% contained both in the same sentence.

Closer analysis of the conversational turns that contained English language shows that 24 turns (1.7%) were simply students reading the instructions aloud. 1371 turns (96.7%) were game-related communication and 20 turns (1.4%) were language related communication. N=3 (0.2%) turns were unrelated to both the game and the language used. This means that the ninth-grade students mostly kept to the task at hand and did not go off-topic almost at all.

Similar to the eighth grade, the observation regarding the reading of instructions usually containing full sentences with proper grammar also applies to the ninth-grade students.

For the conversational turns that contained Norwegian, n=57 (87.7%) turns were game-related. N=5 (7.7%) turns were language related communication and n=3 (4.6%) were related to neither. All the quotes that are used in this paragraph have been directly translated from Norwegian to English by the author. Similar to eighth grade, the few language-based turns contained questions on how to say something in English or understanding what the manual said, as in (16) and (17). The little amount of communication that was unrelated to both the game and language generally entailed basic needs such as ventilating emotion, as in (18) and (19).

(16) G2: G2: and ehm a... jeg vet ikke hvordan man sier det. (9th girls 3 L82)

EN: And ehm a... I don't know how one says that.

(17) B1: B1: Ja men jeg skjønnte ikke det her...det stod sånn. (9th boys 7 L283)

EN: Yes, but I did not understand this...it said...

(18) Oh f***. Don't stress me man! (9th boys 7 L140)

(19) B2: Kødder du med meg? (9th boys 7 L398)

EN: Are you kidding me?

4.2 Reasons for codeswitching

When taking a closer look at the parts of the conversations that contained English and Norwegian or even solely Norwegian, it is interesting to analyze whether the use of Norwegian can be explained as codeswitching. Codeswitching entails any instance of switching languages during the conversation, and in the recordings, there were a total of n=82 codeswitches. The ninth-grade recordings only had n=21 codeswitches, and the eighth-grade recordings accounted for the remaining n=61 codeswitches. This shows that the eighth-grade class had triple the amount of codeswitches of the ninth-grade class that participated in this current project.

N=32 of the codeswitches were preceded by a pause or other signs of HMP such as the use of stop words, e.g. "Eh" and "Ehm". Quotes (20-23) show a few examples of hesitation and brief pauses before switching to Norwegian (in italics), indicating that codeswitching might indeed be due to complications in lexical access.

(20) B2: we can take the ehm... ehm... *bokstaver*. (8th boys 2 L62)

(21) B2: Ok so...this this this... But does it need to be in... eh... *rekkefølge*? (8th boys 2 L207)

(22) G: No, it's like a yellow eh...*knapp*... (9th both 2 L34)

(23) G2: And a little... *prikk, merke*. (9th girls 3 L90)

This form of codeswitching preceded by a pause is not the only form of codeswitching in the recordings, however, as n=50 of the codeswitches happened in an instant, without signs of hesitation. Some of the examples below show a student using a Norwegian word or clause in one sentence, but then immediately switching back to English in the same sentence, and the conversation resumes in English as if nothing happened. Quote (24) shows an instance of a student interjecting a Norwegian word (in italics) mid-sentence, and that same student continuing the conversation in English right after. In (25) one student switches to Norwegian for an entire clause (In italics) during an explanation. She finishes the sentence in English, however, and the conversation resumes in English afterwards. Quote (26) shows a student answering “I don’t know” in Norwegian (Italics) and encouraging the other student to “just try” in English.

(24) B1: Let’s go boy! *Deilig*. Ok finish.

B1: It needs to be like this. (8th boys 2 L27-28)

(25) G2: *Se det er sånn her*, but like upside down.

G1: Oh, that one! But I don’t understand what the order is to press in...I really don’t understand this. (8th girls 8 L66-67)

(26) B1: *Jeg vet ikke*, just try. (9th boys 7 L533)

As shown from the previous two examples not all codeswitches are preceded by pauses, and it would be hard to argue that lexical access is the reason for the switch. Due to the nature of the Norwegian words and clauses that are typically spoken in the recordings, it might be argued that the students use Norwegian out of a habit here. One needs to account for the students being Norwegian, meaning that they probably use Norwegian as their main language in any other class and outside of school. This means that certain phrases that are habitually used in normal Norwegian conversations also might get transferred to other conversations, such as the conversations during gameplay. This explanation becomes all the more plausible when one translates the Norwegian words to English. “Deilig” means “Nice”, the clause “Se

det er sånn her” means “Look it’s like this” and “Jeg vet ikke” means “I don’t know” in English. These words and phrases are commonly used by Norwegian youth, so using Norwegian due to habits seems to be the most logical explanation here.

4.3 Signs of negotiation for meaning and asking follow-up questions

There were many instances of pupils asking follow-up questions and also some instances of negotiating for meaning throughout the recordings. Students asking for further explanation or rephrasing was especially frequent in the task containing symbols, as the students needed to explain symbols that they were unfamiliar with. This led to the students often having to ask questions or even ask for further explanation in order to comprehend what was being said, as in (27). Some students opted for using references in the real world as part of their explanation of the symbols in an attempt to explain their symbols more accurately, as in (28)

(27) (8th boys 2 L67-72)

B1: Does it look like a “P”?

B2: It doesn’t...

B1: Then what does it look like?

B2: It’s like an “I” and in the middle of the “I” it’s a “U”

B1: So, it’s an “I” and in the middle it is down.

B2: “I” and “U”. (8th boys 2 L67-72)

(28) (9th girls 3 L157-160)

G2: Is it an “E” with a dot inside?

G3: Eh no it’s like a sun. like this.

G2: This one maybe?

G3: Yeah, I think so.

A more frequent type of follow-up questions, however, was connected to language. This is also known as negotiating for meaning. These were often related to the pronunciation of certain letters and translations of certain words. Quote (29) shows a simple example of a student negotiating for meaning after the other student used a Norwegian word (*italics*) in an English sentence. Quote (30) shows an instance where the letter “U” is mistaken for the pronoun you, which the students resolve by using the Norwegian pronunciation of the letter

instead, shown in italics in the quote. In some other instances, the clarification process was a lot messier and required multiple conversational turns to resolve the confusion, as shown in (31).

(29) (9th girls 3 L5-7)

G2: Ok... eh... *Ledning*...

G1: Wires... this?

G2: Yeah

(30) (9th both 2 L261-L264)

G: Ehm I have “huh”, like, just eh... “*uuu*”s

B: You?

G: Nei “*Uuu*”

B: Ok yeah, like a “U”

(31) (9th both 2 L237-246)

G: It’s no worm, it’s **unintelligible**... what? Wait...

B: Could you repeat yourself?

G: Ehm it’s not a word it’s **unintelligible**

B: Much... a word?

G: Work... work...

B: Work?

G: I haven’t seen...

B: Is it this thing?

G: Yeah, it’s this thing. It says yes.

4.4 Examples of Grown-up to pupil, and pupil to pupil help.

Every single recording that was transcribed contained at least one instance of students asking either teachers or peers for help. For simplicity’s sake the term “teacher” includes all of the grown-ups present in the classroom, meaning the teacher, the two researchers and any assistants. Many of these questions students had revolved around the manual and how to use it to guide the student with the bomb. Interestingly, sometimes the pupil-to-pupil help resolved the confusion (32), and sometimes it did not (33). However, help from a teacher generally resolved most issues, as in (34). Although, there was an instance where even help

from a teacher did not result in a successful defusal, as in (35). Even though the teacher did not manage to help the students successfully complete the task, she explained to them afterwards what went wrong and how they should solve the task next time. This resulted in both students understanding how to do the task, expressing they understood it and trying again. This illustrates that both help during gameplay and explanations after gameplay can be valuable for the students.

(32) (8th girls 8 L110-113)

G2 (Directly translated from Norwegian): Look, you just do it like this. Look, first you need to find all of the symbols. Let's say this is the symbol, then it is this, that one and then that one. And then you take the one that comes first.

G1: Ohhhh!

G2 (Directly translated from Norwegian): So that one, that one and then that one.

G1: Ok, yes, we did it! Now it is my turn to guide you.

(33) Another student: Then you need to check the serial number on the...

B1: Side?

Another student: And see if it contains a vowel. (8th boys 3 L462-464)

...

Another student: So, try pressing red then.

B1: Red... *beep*... wrong. (8th boys 3 L467-468)

(34) (8th boys 2 L223-230)

Teacher: yeah ok, so I can give you a cheat. And that is that there is only one of them that you do something else than just hold it. So, tell him to just hold it.

B2: Hold!

B1: It's red.

Teacher: And then you go here...

B2: What is the color?

B1: Red.

B2: Release when the countdown timer has a...has a one in any position.

B1: So, I need to...there we go. Yes, we did it!

(35) (9th girls 3 L248-253)

Teacher: So, then we know that you have to do the one with the... that contains a vowel. This is the one you use. Because you know that the bomb has a vowel.

G2: It's gonna explode.

G3: Contains vowels...

Teacher: Yeah

G2: It's exploding.

Teacher: Right, so what happens here? You can all look at this because then you can understand it. So, there's two different tables here. So, you have to figure out which one you use. So, you either use the one... You have to figure out if the serial number contains a vowel. If it is then you would use this one. Then you have to see how many strikes you have, that is mistakes. So, you will use the row with the number of mistakes that you have.

There was a group in the 9th grade class, however, who did not ask for help at all. Even when they failed multiple bombs and even failed the same task over and over, they kept on trying by themselves. It was not until a teacher actually came over and asked them if they knew what was going wrong that they got any form of help. This indicates that not every student will ask for help when they experience difficulties during the game, and it also highlights the importance of someone being present that actively assists when the students get stuck on a task.

There was, however, also a group in eighth grade that struggled and that did ask for help from a teacher in order to find the answers to the questions they had. One of the boys even shouts through the classroom for help, as shown in (36). It took some time for a teacher to come over to them, resulting in multiple shouted requests for help. This shows that the different student pairs in a classroom will handle their questions and obstacles differently. As a teacher it might therefore be helpful to establish a consensus in the classroom that asking for help is allowed, as well as giving the students some guidelines on how to do so without disturbing the other groups. Also, the ninth-grade example mentioned in the previous paragraph shows that a teacher simply walking over to a group and asking how they are doing, could resolve certain issues that otherwise might have persisted for the entire lesson.

(36) B1: HELLO!? CAN WE PLEASE GET SOME HELP!? (8th boys 2 L145)

4.5 Signs of experiencing mastery, or the lack of it.

Every recording contained at least one moment of the students expressing an experience of mastery through joyful exclamations, as exemplified in (37) There were also moments of positive feedback during the game. A typical example of this would be when the students successfully solve one task, they verbally praise the other student for being right, as in (38) and (39). The largest exclamations of joy and indicators of mastery, however, came after the students successfully completed all of the task and defused the bomb. Here exclamations such as (40) were frequently uttered.

(37) G1: YAY! very well. (9th girls 3 L105)

(38) Student: Oh, you defused it... well done. (9th girls 3 L383)

(39) B1: What?! You're too good! (8th boys 2 L456)

(40) G1: YES! We did it! (8th girls 8 L184)

As the students played through multiple bombs and solved multiple cases the total amount of bombs solved also became a part of conversation, especially in the form of bragging to other students and the teachers. In one group in particular, however, the students repeatedly completed the easiest bombs with quite some time to spare, making the goal of the game to set as fast of a completion time as possible. As the teachers picked up on this, they encouraged the students to do some of the harder tasks instead.

There were, however, also cases of students failing the same type of task multiple times. This resulted in ventilation of frustration and sometimes even cussing (censored), as shown in (41) and (42). Some eighth-grade students also expressed a sense of the game being boring (43) or too hard towards the end of the lesson (44) (45), and in (46) one ninth-grade student almost threw in the towel before the lesson was over. Indicating that repeated failure, even after receiving help, can result in a lack of experienced mastery and even bolster negative emotions toward the entire game.

(41) B: I don't have a f*** clue. I don't know. (9th both 2 L318)

(42) B: That is class A bull s***... Ok come on... (9th both 2 L359)

(43) G2 (Translated from Norwegian): Yeah sure. This has been so boring! (8th girls 8 L350)

(44) S1: It's so difficult! (8th boys 3 L568)

(45) S1: It's impossible anyway. (8th boys 3 L575)

(46) B: I think I give up (9th both 2 L390)

In both of the pairs that experienced repeated failure of tasks and not completing the defusals, one of the students verbally expressed giving up. These are clear examples of situations where the students are not experiencing mastery, even to the degree that they throw in the towel and refuse trying again. The groups from the eighth-grade class then started doing something else that is not related to the task at all, but the ninth-grade group tried again on an easier level instead. When trying the easier level, the ninth-grade pair did indeed manage to complete some of the tasks with more success.

Expectation of mastery is a term that indicates whether a student expects to be able to successfully complete a task or learn something. There were multiple instances in the recordings where students from either class uttered uncertainty regarding their ability to successfully play the game, as shown in (47) and (48).

(47) G1 (Directly translated from Norwegian): It was... bombs we were supposed to press right? And then it is the first bomb. Start? This will not go very well though, but eh... I am getting stressed by only having five minutes for this. (9th girls 4 L1)

(48) B1: We're so bad at this (8th boys 2 L82)

There seems to be no single explanation for the expectancy of failure that the students utter. In (47), namely, the student thinks the game will not go very well even before they have started playing. However, in (48) the student says they are bad at the game after having tried a few tasks and failing some of them. Upon closer inspection, most of the utterances connected to lack of mastery originated from failing tasks. Due to the structure of the game, especially the fact that the student with the bomb is dependent on the student with the manual, it seems as though the students with the manual often took the blame for failure of tasks. On a language level, the student with the manual also had the hardest job during gameplay, as they had to read and sift through lots of information in English. The combination of the student with the hardest task also taking the blame for failure might have resulted in an even larger feeling of inadequacy upon failure.

4.6 Correctness and practicing errors?

One concern with student driven activities in the classroom could be the production and re-production of linguistic errors, either grammatically or phonetically. In the recordings, the vast majority of conversational turns followed grammatical rules, although notably most turns did not consist of full sentences. However, in some cases some grammatical errors were made and even repeated multiple times. The most frequent error was the use of "it is" instead

of the existential there. This is a known error for Norwegian learners of English as the Norwegian language translates both the existential there and “it is” the same (Dypedahl & Hasselgård, 2018, p. 103). This leads to the students over-using “it is” in places where the existential there should have been used, as in (49).

Another error that recurred multiple times involved incorrect verb agreement as shown in (50) and (51). In these examples the verb form does not agree with the subject. In the recordings, however, none of these grammatical errors seemed to lead to misunderstandings or interruption of the communication flow. So, from a communicative standpoint one might argue that these grammatical errors are not all that impactful, and therefore not worth over-emphasizing.

(49) G2: Is it batteries in the bomb? (8th girls 8 L12)

(50) G1: Ehm, is there any red wires? (9th girls 3 L8)

(51) G: And it stand hold. (9th both 2 L37)

5.0 Discussion

Gaming and the learning benefits and drawbacks of gameplay in education are commonly discussed, both in research and in educational practices. Interaction with the English language during gaming, both in the form of reading (in)game instructions and especially during in-game communication, does seem to impact the English proficiency of English learners (Sylvén & Sundqvist, 2012, p. 312-316). It is important, however, to investigate if and how this influence may be useful in a classroom setting. The main goal of this thesis was to test whether pupils actually use English when playing a game in the classroom and analyzing to what degree they code-switch with Norwegian. The secondary goal of this thesis was more related to the gameplay itself, and discussing whether games could be suitable tools for learning. Here aspects such as the playability of the game and its impact on students' motivation were investigated.

The results of this study indicate that the students indeed used the target language during the gameplay most of the time, as 91% of the eighth graders' and 94% of the ninth graders' communication was in English. These findings indicate that the game "Keep talking and nobody explodes" allows for lots of oral English communication, also in an ESL classroom setting in a Norwegian secondary school. It seems that there are no significant differences between the linguistic behavior of the eighth and ninth graders, even though I found that there was a slightly higher occurrence of codeswitching in the eighth-grade groups than in the ninth-grade groups. This might be explained by the lower proficiency of the eighth-grade students. The present study does, however, not provide sufficient data to establish a direct causal relationship between the playing of the game "Keep talking and nobody explodes" and the large amount of English that is spoken. Factors such as external researchers conducting a research intervention in the classroom, the students being asked to speak English beforehand, and the fact that the students were being recorded might all have influenced both the quantity of, and the language used during the students' communication. This means that the findings of this study might not accurately reflect a normal classroom situation, and further research is needed to identify the students' reasoning behind their language use during the gameplay.

When it comes to what the English language was used for by the students, most of the English was used for gameplay related communication. Reading instructions aloud accounted for less than three per cent of the language spoken. The amount of English that was read by the students reading the manual, however, was a lot higher. As indicated by many of the students correctly guiding each other, inferring they have both read and understood the

manual and its contents. From a grammatical and syntactic perspective, the conversational turns during the gameplay did often not include full sentences. However, since the game encourages fast communication, this is also not expected. The time pressure of the game did, on the other hand, force the students to communicate their thoughts quickly and react on the spot. The most frequent grammatical errors in the oral communication in L2 were the failure to use the existential *there* and an occasional lack of subject-verb-agreement. Although, in this study I found not a single instance where these kinds of errors led to misunderstandings or loss of communication between the students. The vast majority of misunderstandings were related to either the student with the bomb not accurately explaining what they saw or the student with the manual misunderstanding the written information.

Instances where students switched to Norwegian for more than just single words were still mostly related to gameplay, although some of them were completely unrelated to the task at hand. When seen in the context of the conversations, however, it appears to be rather clear that the vast majority of the students' Norwegian use is related to what Swain (2000) refers to as communication for managing social relations between the students. This is presumably due to the fact that Norwegian is the students' L1 and thus, the preferred language outside of the ESL classroom for many of them. Therefore, it becomes only natural that relation-based communication within the classroom foregoes in the same language as the communication outside of the classroom. There were, however, also some instances of students helping each other to understand what to do during gameplay while using L1, which fits into Swain's (2000) description of using L1 to progress with the task. Lastly, there was a very small amount of turns of language related communication where students specifically asked for the English translation of certain Norwegian words, also in line with Swain (2000). This means that all three of Swain's (2000) described uses of L1 for Canadian bilinguals also were represented in the present study of Norwegian learners of English.

Considering the specific instances of code-switching, the findings are in line with Gardner-Chloros's (2009) statement that single word switches are the most common form of code-switching. In the instances of single word codeswitching the findings from this study also confirm the notion of Gardner-Chloros (2009) that nouns are most frequently used the word class in single-word codeswitches. The majority of the single word code-switches were preceded by signs of HMP, in line with Hlavac's (2011) findings. Although, contrary to Hlavac's findings, in the current study which involves learners of English instead of fully bilingual speakers, the pattern of codeswitches accompanied by HMP occurring solely on

single words might indicate that it is, in fact, trouble in lexical access that causes the switch for the students. Further research would be needed to confirm this notion, however.

The relevance to English learning for students of the game “Keep Talking and Nobody Explodes” in the current project can be divided into two parts. One aspect is the previously mentioned amount of English communication and language input the game facilitates. The other aspect is connected to the students’ experiences of mastery and motivation during gameplay, which are interestingly relatable to theory on motivation and self-determination. Ryan and Deci’s (2020) claim on the individual having a psychological need for competence is clearly reflected in the way students react to succeeding and failing tasks. Upon successful task completion, the students exclaim positive utterances, and they immediately want to try another task. When they fail a task on the other hand, this study found multiple instances of the students uttering negative comments and even wanting to give up entirely. This can be explained as the students’ need for competence not being met, which in turn negatively influences their autonomous motivation, resulting in the previously mentioned negative utterances and attitudes toward the task at hand. Students’ repeated confusion on what to do during certain tasks might perhaps indicate that the gameplay is not very intuitive. This seems to agree with the finding by Ryan et al. (2006) which found that intuitive game controls facilitate competence to a larger degree (p. 361).

It seems that the game’s ability to support the students need for autonomy, as described by Ryan and Deci (2020), varied from group to group. For the successful groups that got to move on from the starter bomb and choose to continue with a bomb of their choice, or even assemble their own, their continuous drive seems to indicate that their need for autonomy was met. On the other hand, there was a group where one of the girls complained this would never go well even before the game started. This preemptive negative attitude might indicate that this game did, in fact, not cater to her interests or her self-perceived level of English competence. The same could be said for the group of girls that continually struggled with the same bomb, where one of the girls commented toward the end that they found the game boring because one simply repeats the same thing over and over again. Further studies would be required to establish if it is this particular game that caused the issue or whether the issue was solely language proficiency related.

6.0 conclusion

First, it is important to reiterate that the sample of students used for this study was small, which means that its findings have limited generalizability. The goal of this study was to find trends and tendencies and to identify opportunities for further research. The findings of this study may also be used by teachers as input in their own reflections around their teaching practices, and the possible implementation of games in their classrooms.

This study found that the students spoke predominantly English during the gameplay with percentages ranging from 91% for 8th grade to 94% for 9th grade. The English used during gameplay typically did not contain full sentences and had some minor grammatical errors from time to time. These factors did, however, not seem to interrupt the flow of communication between the students.

As expected, the students code-switched a number of times during their interactions. Many of these switches were single word code-switches of nouns, which confirms Gardner-Chloros' (2009) notion of single nouns being the most commonly used in code-switching. A minority of single word code-switches were preceded by Hesitation and Monitoring Phenomena, such as pauses or the use of short words such as "Eh" and "Ehm". This might be an indicator of trouble with lexical access, however, further data and research is needed to confirm this notion. The students' limited use of Norwegian seems to correlate with the three uses of L1 that Swain (2000) described for her Canadian bilinguals. The largest amount of Norwegian use can be explained as communication for management of interpersonal relationships, which naturally would be in L1 as that, presumably, is the students' preferred means of communication outside of the ESL classroom. Furthermore, L1 was used in some cases of peer-to-peer assistance and a small amount of translation related questions.

When it comes to motivation and the game's ability to support students' psychological needs as described by Self Determination Theory (Ryan & Deci, 2020), it seems that there are varying outcomes for each pair/group of students. Groups that successfully managed their tasks and progressed to harder ones showed continuous effort and positive exclamations during gameplay, which are indicators of motivation. The findings of this study indicate that their needs for autonomy and competence were indeed met during gameplay. On the other hand, there were groups that after repeated failure gave up on the game and stated the game was boring. In one group one of the students even verbally expressed that this game would never go well before the game even started. In such cases, it seems that the game did not

cater to these students' needs. The present study does not have enough data points to present a conclusive explanation for these differences or how to alleviate them. Thus, which aspects of games and gameplay may or may not cater to supporting the player's needs (as described in SDT) could be researched in more detail in future studies.

The findings of the present study indicate that the game "Keep talking and nobody explodes" can indeed be implemented in a Norwegian ESL classroom as a means of stimulating oral English production. Although there were small differences (less than 10%) between the 8th and the 9th grade, the game seems viable for both 8th and 9th grade use. The more important factor seems to be the actual students in the classroom, pertaining to their interests and L2 proficiency levels, as students with adequate proficiency and interest in the game seem to experience more in-game success, and thus higher levels of motivation.

6.1 Further Research

Firstly, one could study the students' motivation behind, as well as their perception of, their own use of language during gameplay in greater detail. The current study proves a lot of English is used during the gameplay, but it includes no datapoints on students' reasoning for their language use. Studies on the students' reasoning for which language they use might result in a more nuanced understanding of said language use. It might also give teachers meaningful input regarding how they could scaffold the integration of gameplay into the ESL classroom, in order to facilitate optimal English learning. Furthermore, the relationship between playing a game in the classroom and the experience of mastery and motivation could be further explored. This study found that, in certain cases, repeated failure of tasks in-game negatively impacted the students' motivation. It would be interesting to investigate the extent to which variations in motivation, as a result of playing a game or "winning" and "losing" in a game, impact the students' learning process, even after the game is finished. Such a study could provide insight on how the total impact of gameplay on a students' learning process might end up being positive or negative. Furthermore, one could try using different games in the same educational setting, with a purpose that is either the same as or different from the current project. Doing so would give a basis for comparison between the different games and their optimal uses in the classroom, giving teachers even more tools and input to work with in their teaching practices. Lastly, it could be fruitful to compare the use of games as learning methods with other methods in a longitudinal study, where one can compare the learning

outcomes and student developments from a game-based learning process, with other teaching strategies.

References

- Brevik, L. M. (2016). The Gaming Outliers: Does out-of-school gaming improve boys' reading skills in English as a second language? In E. Elstad (Ed.). *Educational technology and Polycontextual bridging* (pp. 39–61). The Netherlands: Sense Publishers. Cambridge University Press.
- https://www.researchgate.net/profile/Lisbeth-Brevik/publication/303083771_The_Gaming_Outliers_Does_out-of-school_gaming_improve_boys'_reading_skills_in_English_as_a_second_language/links/57852c0108ae3949cf538872/The-Gaming-Outliers-Does-out-of-school-gaming-improve-boys-reading-skills-in-English-as-a-second-language.pdf
- Brevik, L. M., & Rindal, U. (2020). Language Use in the Classroom: Balancing Target Language Exposure with the Need for Other Languages. *TESOL quarterly*, 54(4), 925-953. <https://doi.org/10.1002/tesq.564>
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education* (6 ed.). Routledge.
- Conteh, J. (2018). Translanguaging. *ELT journal*, 72(4), 445-447. <https://doi.org/10.1093/elt/ccy034>
- Creswell, J. W. & Guetterman, T. C. (2021). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. (6th global ed.). Pearson Education Limited.
- Dypedahl, M., & Hasselgård, H. (2018). *Introducing English grammar* (3rd ed.). Fagbokforlaget.
- Education Act. (1998). *Act relating to Primary and Secondary Education and Training* (LOV-1998-07-17-61). Lovdata. <https://lovdata.no/dokument/NLE/lov/1998-07-17-61>
- Foster, P., & Ohta, A. S. (2005). Negotiation for Meaning and Peer Assistance in Second Language Classrooms. *Applied Linguistics*, 26(3), 402-430. <https://doi.org/10.1093/applin/ami014>
- Gardner-Chloros, P. (2009). *Code-switching* (1st ed.). Cambridge University Press. <https://doi.org/10.1017/CBO9780511609787>

- Garshol, L., & Reichelt Føreland, L. (2024). Gaming in the English classroom. In A. S. Skulstad (Ed.), *Current issues in English teaching* (pp. 95-114). Fagbokforlaget.
- Gee, J. P. (2013). *Good video games + Good learning: collected essays on video games, learning and literacy* (2nd ed.). Peter Lang Publishing, Inc.
- Hlavac, J. (2011). Hesitation and monitoring phenomena in bilingual speech: A consequence of code-switching or a strategy to facilitate its incorporation? *Journal of pragmatics*, 43(15), 3793-3806. <https://doi.org/10.1016/j.pragma.2011.09.008>
- Krashen, S. D. (1985). *The Input Hypothesis. Issues and Implications*. Longman Group.
- Medietilsynet. (2022). *Barn og medier 2022*. Medietilsynet. https://www.medietilsynet.no/globalassets/publikasjoner/barn-og-medier-undersokelser/2022/231002_barn-og-medier_2022.pdf
- Ministry of Education and Research. (2019). *Curriculum in English (ENG01-04)*. Established as a Regulation. The National Curriculum for the Knowledge Promotion Reform 2020 <https://www.udir.no/lk20/eng01-04>
- Morrison, C. D. (2024, March 15). *Code-switching*. *Encyclopedia Britannica*. <https://www.britannica.com/topic/code-switching>
- Nipen, K. & Aarnes, H. (2023, 16th of February). OMG! Hvordan ble kidsa så vilt gode i engelsk? *Aftenposten, A-magasinet*. <https://www.aftenposten.no/amagasinet/i/BWbKp0/omg-hvordan-ble-kidsa-saa-vilt-gode-i-engelsk>
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemp Educ Psychol*, 25(1), 54-67. <https://doi.org/10.1006/ceps.1999.1020>
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary educational psychology*, 61, 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The Motivational Pull of Video Games: A Self-Determination Theory Approach. *Motivation and Emotion*, 30(4), 344-360. <https://doi.org/10.1007/s11031-006-9051-8>

- Sarkis, J. T., & Montag, J. L. (2021). The effect of lexical accessibility on Spanish-English intra-sentential codeswitching. *Mem Cognit*, 49(1), 163-180.
<https://doi.org/10.3758/s13421-020-01069-7>
- Skaug, J. H., Staaby, T., & Husøy, A. (2017). *Dataspill i skolen*. Center for ICT in Education.
- Silseth, K. (2012). The multivoicedness of game play: Exploring the unfolding of students' learning trajectory in a gaming context at school. *International Journal of Computer Supported Collaborative Learning*, 7(1), 63–84. <https://doi.org/10.1007/s11412-011-9132-x>
- Swain, M. (2000). French Immersion Research In Canada: Recent Contributions To SLA and Applied Linguistics. *Ann Rev Appl Linguist*, 20, 199-212.
<https://doi.org/10.1017/S0267190500200123>
- Sylvén, L. K., & Sundqvist, P. (2012). *Gaming as extramural English L2 learning and L2 proficiency among young learners*. European Association for Computer Assisted Language Learning, 24(3), 302–321. <https://doi.org/10.1017/S095834401200016X>
- Vygotsky, L. (1978). Interaction Between Learning and Development. In Gauvain & Cole (Eds.) *Readings on the Development of Children*. (pp. 34-40). New York: Scientific American Books.
- Zimmerman, E. (2020). Code-switching in conversation-for-learning: Creating opportunities for learning while on study abroad. *Foreign language annals*, 53(1), 149-175.
<https://doi.org/10.1111/flan.12440>

