CHAPTER 9

Gamers' Self-Efficacy When Using English in School and When Gaming

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Abstract: The aim of this study is to examine the relationship between gamers' and non-gamers' self-efficacy when using English while playing video games at home and using English in the classroom. Data were collected through an online questionnaire distributed to 79 first-year upper-secondary students in Norway. The participants were divided into groups of self-reported gaming time per day: Frequent gamers (>3 h), Gamers (2–3h), Casual gamers (1–2h), and Non-gamers (0 h). The results show a statistically significant difference between Gamers (n = 11), Casual gamers, and Non-gamers in terms of self-efficacy. Gamers show a higher sense of self-efficacy when using English in the classroom (M = 39.45) and while playing video games (M = 39.9) than those who play either more or less. Higher self-efficacy correlates with higher grades in both settings (Classroom setting p = <.001; Gaming setting p = .010). There was no connection between being a gamer and their given grades (p = .337). The findings suggest that playing a moderate amount of video games in English can affect students' self-efficacy positively in relation to using the language, both while playing and in the classroom. The findings also suggest that even though spending excessive time on video games might increase self-efficacy while playing, it cannot be transferred to the classroom. Background variables could not account for this difference. A secondary finding reveals clear gender differences in the amount of time spent on video games; further research is required in this field.

Introduction

When it comes to learning a second language (L2), a student's feeling of mastery and accomplishment can lead to increased motivation and

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increased use of this language, which in turn can increase the student's language skills. In relation to motivation, the term *self-efficacy*, or belief in our own abilities, is an important factor in this sense since it may affect our willingness to do something and our self-confidence when doing said action. Having a positive feeling of self-efficacy has shown positive results in relation to students' academic success (Pintrich & DeGoot, 1990; Schunk, 1989). Having this feeling in relation to video games has shown an increased use of the L2 (Soyoof, 2018; Zheng et al., 2009). In addition, research has found that activities done outside of the classroom in English, which are called *Extramural English* (EE) activities, seem to affect L2 learning positively (Brevik, 2016; Sletten, et al., 2015; Sundqvist, 2011; Sundqvist & Sylvén, 2016; Sundqvist & Wikström, 2015; Sylvén & Sundqvist, 2012); one of the EE activities that students often participate in is video games. For example, in 2020 in Norway, 86% of the age group 9–18 play games on either a PC, PlayStation, their phone or tablet (Medietilsynet, 2020, p. 5). Considering how many commercial games are in English, and how many students have access to and play these games, it becomes relevant to examine the impact these games are having on students' sense of self-efficacy in relation to language use.

The purpose of this study is to give teachers more information about the connection between video games and language learning, mainly how self-efficacy may be connected to playing video games. Having high self-efficacy is important for our internal motivation and approach to handling difficult events, which is important for students to have in their language classroom when something becomes difficult. Furthermore, EE activities have a positive effect on L2 acquisition, and one of those activities is playing video games, which happens to be highly motivating. We are also often required to use our L2 (English) in many commercial games, which could lead to language development. Indeed, research has found evidence that boys who played video games likely had increased their feeling of self-efficacy with regard to speaking English (Sundqvist, 2011, p. 117). However, since self-efficacy is domain specific, can self-efficacy related to the use of English be transferred from the gaming situation at home to the classroom? With such a high percentage of students playing video games today, most teachers have several gamers in their

classroom. Understanding how the combination of speaking English and gaming may affect language development might be relevant for how teachers teach and work with gamers in the classroom in order to take advantage of their increased use of L2 and self-efficacy derived from playing video games.

The research aims to answer the following question: What is the difference between gamers' and non-gamers' self-efficacy when using English in both written and oral form (1) in school and (2) when playing video games at home?

My hypothesis is divided into two sections, the first being that gamers will show higher self-efficacy than non-gamers when using English while playing games because research indicates that gamers have a high L2 production while playing games (Brevik, 2016; Brevik & Garvoll, 2019; Sletten et al., 2015; Sundqvist & Wikström, 2015). This may in turn mean they feel less anxiety with respect to L2 production (Sundqvist, 2011, p. 117), having increased their self-efficacy in that arena. Research has found that students with access to video games tend to spend less time on other out-of-school activities (Weis & Cerankosky, 2010, p. 467). Since self-efficacy is domain specific, those who do not participate in other out-of-school activities might not be able to develop their self-efficacy in other domains than gaming. Thus, the second hypothesis is that gamers will have lower self-efficacy scores than non-gamers in the classroom since their self-efficacy will mainly come from playing video games, leaving them lacking in self-efficacy in other areas. This research also opens up possibilities for further research. If it turns out that the gamers have higher self-efficacy when gaming – but not in the classroom – then maybe there is something teachers need to do about this in order for these students to develop their self-efficacy in that arena as well.

Literature review

Self-efficacy

Self-efficacy can be defined as a person's belief in their own abilities to perform a given action (Bandura, 1989, 2006). Perceived self-efficacy may, according to Bandura, determine people's thought patterns, how

they choose to behave, their emotional response in taxing situations, and how much effort they are willing to invest in activities (Bandura, 1989, p. 59–60). It is highly related to motivation, which is relevant in school settings or academia because when students have a high level of perceived self-efficacy, this may increase their wish to seek solutions, develop cognitive skills, and learn more academic subjects (Bandura, 1989, p. 66). High self-efficacy in relation to L2 has also shown an increased use of the target language, which may in turn affect language development (Soyoof, 2018; Sundqvist, 2011; Zheng et al., 2009). Pintrich and De Groot (1990, p. 33) found that the best predictors of performance in seventh graders were self-regulation, test anxiety, and self-efficacy. They also found that higher levels of self-efficacy correlated with higher levels of self-regulation and student achievement across the board (Pintrich & De Groot, 1990, p. 36). They argue that improving students' self-efficacy may foster their use of cognitive strategies, i.e. self-regulation (Pintrich & De Groot, 1990, p. 37).

Our self-efficacy belief comes from four sources of information: mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective states (Bandura, 1989, p. 60). Some of these sources are found within video games, by experiencing success when playing the game and receiving verbal persuasion from teammates, the player might increase their self-efficacy belief in that given setting. In relation to English, the player can develop higher self-efficacy when they are able to communicate with other players in English, or when they are able to understand commands, quests, and directions in the game itself.

However, Bandura argues that self-efficacy is *domain specific*, meaning that one might have a high level of self-efficacy in one area but not in another. Thus, there might not be a correlation between self-efficacy in different situations, unless the person's general feeling of self-efficacy is high. There is also a multidomain measurement of self-efficacy that can reveal a general indication of a person's "sense of personal efficacy" (Bandura, 2006, p. 307). If our personal efficacy is high, it might be easier to acquire higher self-efficacy in different areas because we already know what we need to do in order to "succeed", or feel a sense of mastery.

Extramural English activities

The positive effect of having a high level of self-efficacy in everyday life and in an academic setting is relevant in relation to *Extramural English* activities. EE activities are ones that students engage in outside of the English classroom that involve the use of English in different forms, such as watching TV, chatting, or playing video games. Watching TV in English requires the use of our listening skills (and reading skills if there are English subtitles); communicating with people online requires us to use our writing and reading skills, and possibly our speaking and listening skills as well depending on the communication method. The Norwegian Media Authority found that among the 2,682 respondents in their study, 70% agreed that gaming makes them better at English, which previous research confirms (Medietilsynet, 2020, p. 7). Research shows that Extramural English activities (EE) can be an effective tool for language learning, including oral proficiency and vocabulary acquisition (Sundqvist, 2011). Research has also discovered a positive relationship between EE and students' grades (Sundqvist, 2011; Sundqvist & Wikström, 2015; Sundqvist & Sylvén, 2016). Indeed, research (Brevik, 2016; Brevik & Garvoll, 2019; Sletten et al., 2015; Sundqvist & Wikström, 2015) also shows that students who play video games also generally do well in English in school because they often read and produce a lot of L2 when playing video games. This means that spending time on EE activities can increase students' chances to achieve academic success. Sundqvist (2011) also states that high-achieving students often engage in more EE; thus, their grades are higher, which is arguably a mutually reinforcing situation (p. 114).

There has also been found a positive correlation between playing video games and lower anxiety levels for L2 production. Sundqvist (2011) found that boys who played video games had lower levels of anxiety about using the language, which could in turn have affected their sense of self-efficacy (p. 117). Knowing that students today spend a lot of time playing video games outside of school (as an EE activity), it would be valuable to conduct further research to explore 1) if this also affects their self-efficacy belief in different settings, and 2) how their self-efficacy belief is similar or different when playing video games or participating in the classroom, a second arena where they use their L2.

Video games

One of the categories that has been involved throughout the studies of EE is video games. Most research done on video games is concerned with what aspects of L2 acquisition it affects and increases. The research often seems to be in favor of the potential benefits of L2 acquisition through video games. However, according to Sylvén and Sundqvist (2012, p. 308), despite the existence of research pointing towards the potential of L2 learning in video games, the empirical studies are scarce.

Research has found that video games as an EE activity have both a positive and negative impact on students' grades and academic achievements. In Norway, Brevik (2016) found that out-of-school gaming improved boys' reading skills in their L2 but not in their L1. Sundqvist and Sylvén (2012) also found that there was a positive correlation between L2 proficiency and time spent on digital games in Sweden. Frequent gamers, who played more than 5 hours a week, scored the highest on the vocabulary test and on the national reading and listening comprehension tests (Sylvén & Sundqvist, 2012, pp. 313–14).

On the other hand, Weis and Cerankosky (2010) found that boys between the ages of 6 – 9 who had access to a video game console had lower reading and writing scores than those without one (p. 467). They also found that the boys who had access to video games spent less time participating in after-school activities (Weis & Cerankosky, 2010, p. 467). In Norway, we have seen similar results as well. Sletten et al. (2015) examined the difference in grades between gamers and those participating in a sport as an extracurricular activity after school. They found that students who play a lot of video games achieve lower grades in mathematics and Norwegian compared to those who participate in sports. Students who participate in out-of-school activities have also shown higher grade averages and overall academic engagement, according to Knifsend and Graham (2012). However, they achieve similar grades in English (L2). Among the gamers there is little difference in grades (Sletten, et al., 2015, p. 346). Arguably, there are more factors that affect students' grades than just gaming; however, gaming can affect their reading skills in a positive way. It seems spending time on other after-school activities is also relevant for higher academic achievement.

At the same time, research also shows that there is no statistical difference between gamers and non-gamers when it comes to grades, but that the gamers showed an increased use of the L2. Zheng et al. (2009) found that students who played the game *Quest Atlantis* (QA), a game designed for children and students ages 9–13 with an educational backdrop and quests, expressed a high level of confidence in their daily and advanced use of English (p. 218). However, the statistical results of the essay test were in favor of the group which did not play, and the Flesch-Kincaid Grade Level test yielded no difference between the groups (Zheng et al., 2009, p. 218). These results can be seen as positive, Zheng et al. argues, because the QA group "expressed high confidence in advanced and daily use of English" which made them "use language creatively and freely" (Zheng et al., 2009, p. 218). Soyoof (2018) found that students perceived video games as enhancing their L2 confidence because the games were intrinsically motivating and allowed them to be creative and autonomous in their learning process. While playing video games may also foster sociologistic competence, which is important for everyday life and communication (Peterson, 2012), it may also minimize students' learning efforts with respect to the target language and maximize the English learning rate (Alhaq et al., 2020). The increased use of L2, reduction in speaking anxiety, and increased motivation to use it in different ways could therefore potentially lead to higher academic achievement in the long run due to the amount of output.

Material and methods

When the term *gamer* is used in capitalized form (Gamer), I am referring to the classification in this paper, and when the term is used with lower-case letters, I am referring to gamers as a group of people who play video games in general (that would encompass Casual gamers, Gamers, and Frequent gamers). The two settings discussed in the analysis will be 1) the setting of using English when playing video games at home, and 2) the setting of using English in the classroom.

Participants

The study used a sample of first-year students attending upper secondary school in Norway (ages 15–18; $n = 79$; 30 boys, 49 girls) and taking vocational and general courses. The participants were grouped according to their self-reported amount of time spent on playing games per day. The groups and gender distribution can be seen in Table 1. Initially, although the study asked for students at all levels of upper secondary to participate, only some first-year teachers and their students agreed to do so. The participants and their schools were chosen through purposeful sampling, the requirements being: 1) that they were upper secondary students in Norway, and 2) all had to have English as either an elective or mandatory course. The schools were chosen based on my knowledge of schools in different areas in Norway, including Vestfold, Vestlandet, and Northern Norway. Each school's English department head was contacted via e-mail to distribute the questionnaire to their English teachers. The response rate was low; 22 schools were contacted, but only a few schools in the southern parts of Norway (Vestfold and Vestlandet) agreed to participate. Consent was requested in the questionnaire, which was anonymous.

Table 1. Gender and Gamer Type Distribution

Gamer classification	Female *n*	Male *n*	Total *n*
Frequent gamer (>3h)	5	5	10
Gamer (2–3h)	2	9	11
Casual gamer (0–2h)	12	15	27
Non-gamer	30	1	31
Total	49	30	79

Material

The empirical data included a questionnaire written in English, except for the question about consent, which was written in Norwegian to avoid any misunderstandings. It was distributed from early September until early November through *Nettskjema* (UiO). The teachers were free to administer it during class or give students the option to fill it out at home. The questionnaire consisted of 44 questions that asked about categorization

(games played, gamer classification, etc.), self-efficacy measured with a 6-point Likert scale (23 questions), and extramural English activities. It contained questions about gaming and in-class participation and use of English in both settings as well.

The questions were mainly written by me according to Bandura's (2006) guide on how to construct self-efficacy scales; several were phrased in terms of "can do" since *can* denotes capability (Bandura, 2006, p. 308). Some questions were also either adapted or used as they appeared in other original research, Zheng et al. (2009), Allan (2006), Sundqvist (2009), and Schwarzer and Jerusalem (1993). The reason for basing some questions on earlier research was not only to gain inspiration on how self-efficacy had been measured but also to include questions that had a high level of reliability. In accordance with Bandura's suggestions (2006, p. 313), I included four test questions about the participants' belief in whether they could lift certain objects as a practice scale to help participants become familiar and clear up misunderstandings they may have had.

The questionnaire was given as a pilot test to two students in the same age group (15–18). They asked to have the scale extended from 4 options to 6 options because they felt some elements required a lower or higher value. This was done before the distribution to avoid a ceiling effect where the items might have been too easy or too difficult for the participants (Ary et. al., 2014).

Analytical procedures

The reliability score for all questions combined (23) scored a high reliability of $\alpha = .903$, which is positive; however, the questions related to the use of video games (GQ1–4) and participation in the classroom (CQ1–6) did not directly ask students about their sense of self-efficacy in relation to English but rather about their sense of general self-efficacy in the two settings. In order to make sure that self-efficacy measured the use of English, these were removed from the making of the index, see Table 2. The classroom questions also included two questions (CQ 3 and 4) that were not asked for the gaming setting with regard to their willingness to participate in classroom activities. These questions were not asked in the

gaming setting since the chances of gamers finishing or playing a game they do not like is less likely, particularly since they play the video games in their free time.

The questions regarding the use of English when playing video games (GQ5–11) and participating in English class (CQ7–13) were used to create a self-efficacy index, see Table 3. These items had no questions that needed to be reverse scored. The reliability score measured using Cronbach's alpha for the main questions regarding self-efficacy when using English were as follows: gaming and self-efficacy ($\alpha = .87$), self-efficacy in the English classroom ($\alpha = .91$), and all questions regarding self-efficacy combined ($\alpha = .93$). These questions were chosen because they focus on students' written and oral communication abilities rather than on their motivation. While these questions are similar in nature, their difference lies in the setting. A Pearson's correlation coefficient was computed to assess the linear relationship between the self-efficacy items. There was a positive linear correlation between the two variables ($r = .763$, $p < .001$), meaning that they tend to increase and decrease together.

All the data were analyzed using IBM SPSS 28. I kept the convention of regarding $p < .05$ as significant. One-way analysis of variance (ANOVA) was used to examine the relationship between the dependent variables and independent variables. As regarded ANOVA, the post-hoc test used was Tukey's HSD when the group variances were seen as equal. Partial eta squared ($\eta 2$) was used to measure effect size in ANOVA. Cohen's conventions were used to determine effect size for eta squared, .01 being small, .06 being medium, and .14 being large (Pallant, 2013; Schäfer & Schwarz, 2019). In cases where homogeneity of variances was violated, two different tests were used, the Welch and Brown-Forsythe (Pallant, 2013). The Games-Howell test was used instead of Tukey HSD in these cases.

Table 2. Questions Removed from Self-Efficacy Index

English when gaming questions (GQ)
1. If I have to play a video game I have never played before, I already know I am going to lose.
2. I always try my best when I play video games.
3. If I try hard enough, I can complete the video game I want.
4. If I make a mistake in a video game, I can try again and learn from my mistakes.

English in the classroom (CQ).
1. If I have to do something new in English class that I have never done before, I already know I am going to fail.
2. I always try my best in English class.
3. I can partake in or complete most tasks in English class if I try.
4. I work hard to do well in English even when I don't like the class.
5. If I try hard enough, I can get the grade I want in English.
6. If I make a mistake in class or an assignment, I can try again and learn from my mistakes.

Table 3. Self-efficacy Index

Gaming questions (GQ) used for self-efficacy index.
5. If I have to write something in English when playing a video game, I can do it.
6. I can express myself in written English when I play video games.
7. I can write grammatically correct when chatting in English in a video game.
8. If I have to talk to someone in a video game, I can understand what they are saying in English.
9. If I have to speak English in a video game, I can do it.
10. If I have to talk to someone in a video game, I can express myself in English.
11. I can talk about topics related to video games without difficulty in English.
Classroom questions (CQ) used for self-efficacy index.
7. If we have to write about a new topic in English class, I feel I can do it.
8. I can express myself in written English in the classroom.
9. I can write grammatically correct in English class.
10. If I have to talk to someone in class, I can understand what they are saying in English in the classroom.
11. If I have to speak English in the classroom, I can do it.
12. If I have to talk to someone in the classroom, I can express myself in English.
13. I can talk about school related topics without difficulty in English.

Background variables controlled for

The research questions are concerned with the differences between gamers' and non-gamers' self-efficacy scores in the use of English in a school setting and when playing video games, but the collected data also enabled examination of other variables. The variables controlled for in this study are different gamer types, other EE activities, and grades. Other variables were types of games played, language used when playing, and more detailed gender differences, which should be examined in a different paper.

Results

Self-efficacy and gamer classifications

The ANOVA results concerning self-efficacy when using English while gaming showed a statistically significant difference between the mean score of Gamer and Casual gamer ($p = .007$, 95% C.I. = 1.3708, 11.4844) and Gamer and Non-gamer ($p = .018$, 95% C.I. = 0.7218, 10.6447). Statistically significant results mean that they are unlikely to occur by chance; in other words, they are likely due to a specific cause. The *p*-values show that the chances of the differences measured between the gaming classifications arising from chance is small since they are below .05. The effect size measures the magnitude of the results, or their practical significance, which is high ($\eta 2 = .166$), suggesting that gamer classifications explain 16.6% of the variation between students' self-efficacy while using English when gaming. This score complements the significance measured from the *p*-value. Gamers have the highest mean score for self-efficacy, an average of 39.9, while Casual gamers score 33.48, see Table 4. Similar results can be seen between Gamers and Non-gamers, where the Gamers score higher for self-efficacy than the Non-gamers who have a lower mean score. There is a possibility that Gamers have a greater feeling of self-efficacy due to their gaming habits since the results show the main differences between Gamers and the two other categories, Casual gamers and Non-gamers, who play less during a day.

The ANOVA revealed statistically significant results between the same groups as previously found in the classroom setting ($F(3, 75) = 3.063$, $p = .033$). The effect-size was considered medium ($\eta 2 = .109$), with 10.9% of the differences being explained by the different gamer classifications. Gamers had a much higher mean score of 39.45, and Casual gamers had the lowest score of 32.88 ($p = .026$, 95% C.I. = 0.5636, 12.5677). The difference between Gamer and Non-gamer was also significant, where Non-gamers have the second lowest mean score ($p = .039$, 95% C.I. = 0.2108, 11.9886). In both settings, Gamers score the highest of all groups, suggesting there is some attribute found in this group which could be part of their high self-efficacy score.

Regarding both settings, there was no statistical difference between Frequent gamers and Gamers ($p = .849$ while gaming; $p = .329$ in the

classroom), nor between Frequent gamers and Non-gamers (p = .225 while gaming; p = .938 in the classroom). What this indicates is that the difference in mean score could be random and not attributable to the amount of time spent on video games. However, it is worth noting that while Frequent gamers have a higher mean score of 38 in the gaming setting, they only score 34.7 in the classroom setting. This finding could suggest that their self-efficacy is indeed higher when playing video games but that they are not as confident in the classroom.

Table 4. Self-Efficacy ANOVA Descriptives

Dependent variable	Gamer classification (Total *n*)	Mean	SD
Self-efficacy in the gaming setting	Frequent gamer (10)	38	3,59
	Gamer (11)	39,9	3,2
	Casual gamer (27)	33,48	6
	Non-gamer (31)	34,22	5,8
	Total (79)	35,24	5,7
Self-efficacy in the classroom setting	Frequent gamer (10)	34,7	7,2
	Gamer (11)	39,45	3,2
	Casual gamer (27)	32,88	6,7
	Non-gamer (31)	33,35	6,5
	Total (79)	34,21	6,6

Note. The maximum score for each setting was 42. The Mean summarizes the responses and gives us the average answer for that group. The gaming setting relates to the use of English while playing video games at home through either oral or written communication. The classroom setting relates to the use of English inside the classroom; no specific activity was mentioned, and they did not play video games in class.

Table 5. Grade Distribution among Gamer Classifications

Gamer classification	Self-reported grades received					
	2	**3**	**4**	**5**	**6**	**Total**
Frequent gamer	0	1	2	4	3	10
Gamer	0	0	3	5	3	11
Casual gamer	2	2	9	11	3	27
Non-gamer	2	1	9	12	7	31
Total	4	4	23	32	16	79

There was no statistical significance between the gamer classifications and grades received (p = .337), see Table 5 for grade distribution. This

signifies that the grades they received are not connected to the groups they were placed in, meaning time spent on gaming is not statistically connected to grades. There was a small statistical significance between the gamer classifications and grades they believed they could get, i.e., a question about their ability to achieve a better grade ($p = .046$). The effect size for the latter ($\eta 2 = .101$) was considered medium. The difference was found between Gamers, who had believed they could get a higher grade, and Casual gamers, who did not believe this as strongly ($p = .040$, 95% C.I. = 0.0327, 1,9134).

Gamers and EE activities

To examine the correlation between the gamer classifications and their participation in extramural activities, a cross-tabulation was conducted, followed by an ANOVA. There was not a statistically significant difference in the other EE activities between any groups, meaning none of the groups spend more or less time than any other group on such activities. In addition, most participants reported spending time on other EE activities than playing video games. There was a close to significant result in the "talking online" category ($F(3, 75) = 2.518$, $p = .06$), and the groups that showed the largest difference were Gamers, who spent more time talking compared to Casual gamers ($p = .127$) and Non-gamers ($p = .244$).

Self-efficacy, gamers, and grades

The ANOVA examining the relationship between self-efficacy and grades violated homogeneity of variances for the classroom self-efficacy questions ($p = .018$) but not for the gaming questions ($p = .069$). Thus, the Welch and Brown-Forsythe robust tests of equality of means were conducted, and both tests reported a statistical significance (Classroom setting $p = <.001$; Gaming setting $p = .010$). In the gaming setting, the students who received grade 4 had lower self-efficacy belief than those who had received grade 5 ($p = .046$, 95% C.I. = −6.9029, −.0400) and 6 ($p = <.001$, 95% C.I. = −9.1430, −1.8625). In the classroom, the differences were significant between those who received grade 2 and grade 6 ($p = .037$,

95% C.I. = –34.4190, –1.8310). There was also a significant difference between those who received grade 4 and grade 5 (p = .006, 95% C.I. = –8.9917, –1.1252), and between grade 4 and grade 6 (p = <.001, 95% C.I. = –12.1256, –4.4287) and grade 5 and grade 6 (p = .012, 95% C.I. = –5.9008, –.5367). In both settings, those receiving the lower grade reported lower self-efficacy than their counterpart, meaning that grade 5 reported lower self-efficacy than grade 6.

Discussion

I would like to emphasize that the findings of this study should not be overgeneralized due to the sample size, which was comprised of only 11 Gamers, see Table 1. However, the collected data reveals a positive pattern between self-efficacy belief and playing video games, with a few limitations.

This research aims to explore whether there is a difference between gamers and non-gamers' self-efficacy when using English in written and oral form (1) when attending school and (2) when playing video games at home. The hypothesis mentioned earlier was that gamers would have a higher sense of self-efficacy when using English because they use it frequently, which can be confirmed by these results (Sundqvist, 2011; Zheng et al., 2009). Frequent gamers and Gamers do show higher self-efficacy than non-gamers in both situations, see Table 4 for mean differences. Frequent gamers, however, are not statistically different from the other groups, suggesting that this difference might be random. It is only Gamers' results that is statistically significant from Casual gamers and Non-gamers. This enforces Sundqvist's (2011) assumption that frequent gaming is not only highly likely to affect students' self-efficacy, since both Frequent gamers and Gamers score high, but it also marks a division between the gamer classifications and time spent on gaming. Gamers (M = 39.45, SD = 3.29) show a higher mean score compared to Frequent gamers (a difference of 1.9), and the deviation within the Gamer group is lower, meaning they are more consistent in their answers as a group (though only by 0.38). This creates a division between the Gamers and Frequent gamers, which could point towards there being activities or qualities about Gamers that

affect their self-efficacy which we do not see as statically significant in the other groups. Despite playing a little bit every day, Casual gamers, who play less than 2h a day, have the lowest mean score in both settings, suggesting that amount of time is not enough to increase self-efficacy compared to Gamers. There is something that separates Gamers from the other gamer classifications in terms of self-efficacy, which is not found in those who play little or not at all. This could suggest that there is a fine line between how much video games one should play to see a statistically relevant result in high self-efficacy and how much playing more (more than 2 hours a day) can increase self-efficacy.

In addition, there is a positive linear correlation within the self-efficacy questions themselves ($r = .763$, $p < .001$), meaning that these variables tend to increase together, i.e., greater self-efficacy related to L2 use when gaming is associated with greater self-efficacy in the classroom. Arguably, this could also mean that greater self-efficacy when using English in the classroom affects students' sense of self-efficacy when using English in different situations, such as when gaming. However, all groups show higher self-efficacy in the gaming category even though some of them report not playing games at all. None of the additional variables give any indication as to why this is the case. One possible argument could be that the environment, or setting, is seen as being different from the classroom. Failure in a video game can be seen as positive because it allows you to try again. These failures, according to Gee, can allow players to take risks that they would not normally take in environments where failure has a higher cost – for example related to grades in school (Gee, 2006). On the other hand, Gamers report the highest and most consistent self-efficacy scores in both settings. This could suggest there is something that affects Gamers' self-efficacy that the other groups do not have, which gives them a high feeling of self-efficacy in both situations. It is worth pointing out that Frequent gamers report high scores of self-efficacy in the gaming setting (M = 38) but much lower in the classroom setting (M = 34.7). This could suggest that they are not able to transfer their self-efficacy from one setting to another, or that their personal efficacy does not affect their self-efficacy in the classroom, unlike their fellow gamers in the Gamer group.

One reason for the difference between Gamers and Frequent gamers could be the amount of time they spend on other out-of-school activities in combination with playing video games. It could be that partaking in other activities might affect one's personal self-efficacy, which might in turn be transferrable to other domains. According to Bandura (2006), having a high sense of personal efficacy, the multidomain measurement of self-efficacy, might make it easier to acquire high self-efficacy in other areas. Thus, if participating in out-of-school activities influences grades in other courses than English, as noted by Sletten et al., (2015), it is possible that it could also influence a student's multidomain self-efficacy. Participating in other activities might lead students to feel a sense of mastery in those areas, for example being good at playing football, which in turn can affect their overall self-efficacy. Sletten et al. (2015) and Weis and Cerankosky (2010) note that those who play video games tend not to participate in other out-of-school activities. However, since Gamers only spend 2–3 hours a day on video games, they have time for other activities. Frequent gamers, on the other hand, might spend more time playing video games, leaving them with high self-efficacy in that area but with no other out-of-school activities to participate in. This could provide the Gamers with higher self-efficacy in many areas, increasing their overall personal efficacy.

One might also argue that the domain being examined is the use of English (written and oral), and that the settings of gaming and being in class are secondary. Thus, a combination of high-grades (Gamers had an average grade of 5), participation in EE-activities other than gaming (they talked slightly more than Casual gamers as an EE activity), and playing video games (2–3 h/day) have left the Gamers with a high sense of personal self-efficacy, which makes it transferrable between different situations as long as the domain is the same (in this case the use of English). However, it seems to be important to include video games as a factor since other EE activities had no significant impact on self-efficacy scores.

Based on the data from this research, it is not participation in other EE activities that marks this difference between non-gamers and gamers. There were no significant findings between the groups, and all groups report participating in EE activities. However, it is worth noting that

most of the groups had a relatively high mean for self-efficacy since the maximum mean could be 42, and all group means are above 32 (Table 4). Their participation in other EE activities could be part of the answer as to why their mean scores are as high as they are; it could also provide part of the answer as to why they have lower self-efficacy than the gamers. They use their English quite often, but perhaps not as often as the Gamers (M = 39.9) and Frequent gamers (M = 38), thus resulting in lower self-efficacy than those groups. Indeed, despite it not being a statistically significant finding, Gamers also talked more online than Casual gamers and Non-gamers, presenting another difference between the groups. These results could imply that while students who participate in EE activities have high self-efficacy, playing video games might increase self-efficacy more than other EE activities. This reinforces Sundqvist's (2011) assumption that boys who play video games likely have a higher feeling of self-efficacy; it also confirms the results found by Zheng et al. (2009) where students expressed a high level of confidence in using English after playing video games in this study due to high levels of self-efficacy seen in Gamers and Frequent gamers.

There was also a positive correlation in both situations regarding self-efficacy's connection to students' grades; while in the classroom (p = <.001) and while gaming (p = <.010). Earlier research (Pintrich & De Groot, 1990; Sundqvist, 2011; Sundqvist & Sylvén, 2016; Sundqvist & Wikström, 2015) suggests that higher grades correlate with higher self-efficacy, and the current data confirm this suggestion. However, the differences that are statistically significant are not only between the lowest and highest grades. The largest grade gap is found in the classroom setting between grade 2 and 6, but most of the statistical differences are found between those who receive grade 4 and those receiving grades 5 and 6, despite grade 4 showing a "high degree of competence in the subject", according to the Norwegian Directorate for Education and Training (2016). To clarify, 78% (n = 18) of those receiving grade 4 are Casual gamers or Non-gamers, which could be part of why they report lower self-efficacy in both settings. This does not mean their grade is dependent on playing video games; rather, it could offer some insight into why their self-efficacy is lower. The same could be argued for those receiving grade 2, since they

also fall into the same categories. However, none of the variables examined in this paper could account for the self-efficacy differences between grades 5 and 6 in the classroom.

Despite there being a connection between grades and self-efficacy, there was no connection between the gamer classifications and grades received (p = .337). Although earlier research has seen a connection between the two, those studies look at specific test results, including reading skills (Brevik, 2016; Sylvén & Sundqvist, 2012) and vocabulary levels (Sylvén & Sundqvist, 2012). Similar results to the ones from this study have been seen earlier (Sletten, et al., 2015; Zheng et al., 2009). Arguably, being a gamer does not affect your grade positively or negatively in a statistically significant way when we only look at grades received in English (and not specific learning goals or test results). It should be noted that none of the Gamers reported receiving grades 2 or 3, meaning they perform at an average and above average level in English. However, since there was no statistical significance between gamer classifications and grades received (p = .337), their grades are not necessarily only a result of their gaming but other factors as well, which could be linked to time spent on other out-of-school activities, or EE activities, which all participants reported partaking in. There was, however, a small statistical significance between Gamers and Casual gamers when it came to the grades they believed they *could* get (p = .046), possibly showing some evidence that gaming can increase students' belief in their own self-efficacy. In this case, it is their belief that they can achieve a better grade if they want to or try hard enough which could be useful in the future for their motivation to achieve and work hard for a higher grade.

Another interesting finding is the gender distribution among gamers. There is only 1 male who categorizes himself as a non-gamer compared to 30 females. This means that only 38% of the girls play video games, while 96% of the boys do. The amount of gamer girls in this research is lower than the average for students aged 15–16 in Norway. According to the Norwegian Media Authority, 97% of boys within that age range play video games, but only 62% girls do (Medietilsynet, 2020, p. 5). There are studies that suggest there are language learning contexts where females might feel more motivated than boys, and vice versa (Onwuegbuzie et al.,

2000). Gaming has commonly been seen as a male-dominated area, which could provide male gamers a higher level of motivation when practicing skills in its context, such as language development, while gaming. This could affect their self-efficacy in this situation because they are already motivated, which could account for the Frequent gamers' high self-efficacy score in the gaming setting but the lower one in the classroom setting. However, 54% of the boys are in the Casual gamers category, which shows lower self-efficacy. This could be connected to the discussion concerning gender differences in school, where boys tend to score lower than girls overall (Statistics Norway, 2021), a situation which might affect their self-efficacy. The results show a gender difference in gametime, but future research will need to be conducted in this area.

Concluding remarks

The motivation for this study was to examine the differences between gamers and non-gamers' self-efficacy in relation to using English in the classroom and while gaming at home. The data shows some evidence that Gamers (n = 11) who play between 2–3 hours per day report a statistically higher self-efficacy score than both those who play more and those who play less. This could imply that there is a limit to how much you can play in order to feel a sense of mastery of the language, i.e., higher self-efficacy. For example, unlike Frequent gamers, who also score high in self-efficacy while gaming, Gamers seem able to transfer their self-efficacy between the two settings. It is plausible that these Gamers also spend time on other out-of-school activities, or homework, which could be affecting their personal efficacy and which could make it easier for them to transfer domain specific self-efficacy. There was no statistical evidence that being a gamer affects your overall grades; however, Gamers did believe they could achieve higher grades than the other groups, suggesting their self-efficacy is high and that they believe that if they work hard enough, they can get better grades.

Using English while playing video games and using English in the classroom require similar types of skills, including oral and written production of L2 English. Frequent gamers, however, do not seem to be able

to transfer their self-efficacy between different settings, even though what is being used requires the same ability (their use of English). This could be relevant for teachers to be aware of. Research has shown that high self-efficacy may lead to academic success. Consequently, it might be useful to take advantage of Frequent gamers' high sense of self-efficacy while using English in the gaming setting to further develop their self-efficacy in the classroom. Further research is needed on how to approach this suggestion. It would also be interesting to study what other types of games the different gamer categories and genders play. The surprising results of the higher mean score in the gaming setting for all groups is also worthy of further research. Examining the differences in self-efficacy and grades between genders in the current dataset would also be relevant due to the high gender differences.

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