

YOUNG GAMERS IN THE DIGITAL WILDS: IMPLICATIONS OF GAMING PREFERENCES ON L2 ENGLISH VOCABULARY LEARNING AND TEACHING

Este estudio involucra a estudiantes jóvenes de inglés como lengua extranjera/segunda (L2) en Suecia. El objetivo es ver si hay una relación entre sus hábitos de videojuego, por un lado, y el conocimiento del vocabulario en inglés y la comprensión auditiva, por el otro, e investigar las palabras conocidas en relación con sus preferencias de juego. Recopilamos datos con un cuestionario, una prueba de vocabulario y una de comprensión auditiva, y analizamos los datos con un método mixto. Los resultados mostraron correlaciones positivas entre la frecuencia de videojuego y el vocabulario, así como la comprensión auditiva. Jugar juegos multijugador parecía más común entre aquellos que informaron que *siempre* jugaban, en comparación con aquellos que jugaban *a menudo* o *raramente*. Se discuten las implicaciones pedagógicas.

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Introduction

Playing online digital games is a very popular spare-time activity among school-age children. Many are prepared to go to great lengths to become part of online gaming communities. In one study, we interviewed 14-year-old Eldin who told us about how he had spent hours upon hours after school when he was younger just watching others play the game *Halo*, trying to figure out what was happening in the game and understand what people were saying in English, a foreign language to him at the time. Eventually, he dared start playing himself, describing his experience as “three years of informally learning English by trial and error” (Sundqvist, 2015: 359). Since English is often the default language of online games, gaming has become an important foreign/second language (L2) learning activity. In the study we report on here, carried out among primary school L2 English learners in Sweden, our aim is twofold: to see whether there is a relation between online gaming on the

one hand and vocabulary outcomes and listening comprehension on the other, and to investigate vocabulary items more closely in relation to gaming preferences. As the literature review will show, there is great L2 learning potential in gaming.

Literature review and previous studies

The relation between digital gameplay and language learning has grown increasingly important in second language acquisition research over the last two decades, not least because of the pedagogical benefits of games. Gee (2007) points out that games offer several and repeated opportunities for practice and can lower players' affective filter and thereby encourage risk-taking, which is important in language learning. A Turkish gamer, cited in Thorne and Fischer (2012), expresses how such a fearless attitude helped him develop fluency in English: “Having people from many countries [to game with] wipes away the fear of looking really silly when trying to

pronounce correctly ;)”. In gameplay, it is also possible to take on a different persona through the use of avatars, which for some may facilitate interaction with others (Sylvén & Sundqvist, 2012). Thus, games offer possibilities of input, interaction and output in English, and especially so multiplayer and massively multiplayer online games.

Research involving young learners has shown positive relations between Extramural English (EE, “the English learners come in contact with or are involved in outside the walls of the classroom”, Sundqvist, 2009: 1), in particular gaming, and various aspects of L2 English proficiency. In a study from Sweden among 11- and 12-year-olds, we found statistically significant differences between *frequent gamers* (playing >5 hours/week), *moderate gamers* and *non-gamers* on measures of vocabulary and listening and reading comprehension, where frequent gamers consistently scored the highest, followed by moderate gamers, and last non-gamers (Sylvén & Sundqvist, 2012). Boys outperformed girls in terms of L2 vocabulary, potentially because they spent more time gaming and preferred mainly to play multiplayer and online role-playing games (where oral interaction often is an inherent part of the game design), while girls preferred singleplayer games (missing out on opportunities for authentic communication).

A Danish study involving learners aged 8 and 10 corroborated these findings. Hannibal Jensen (2017) found that GAMING, LISTENING TO MUSIC, and WATCHING TELEVISION were the three most popular activities, and again boys gamed a lot more than girls. She concludes that “gaming with both oral and written English input and gaming with only written English input are significantly related to vocabulary scores, in particular for boys” (p. 1). In another study, Hannibal Jensen (2019) showed that young learners deliberately may choose content in English over Danish online. For example, 7-year-old Nina “played games and watched a great number of fairytale-like YouTube videos on these games” (p. 78). Thus, although gaming is much more common among boys, it is worth noting that also girls can choose to become gamers.

Sweden and Denmark are subtitled countries, so children are exposed to English audio-visual input from an early age through television and film. The step to actually start gaming in English is perhaps not that large to take for them. But what happens in dubbing countries, such as Austria or Switzerland? Schwarz (2020) shows that 10th-graders in Vienna invest more than four hours a day on EE activities. For gaming, a gender-related difference was found, echoing findings from the Scandinavian countries. There was a clear positive relation between EE and receptive (but not productive) vocabulary size. The author concludes that while adolescent engagement in EE activities overall is very similar when learners from subtitled and dubbing countries are compared, the earlier exposure to English for learners in subtitled countries seems to significantly impact their learning trajectories and L2 learning outcomes.

This study complements previous research by looking at games young learners enjoy playing and by comparing game preferences with the words they display knowledge of through a vocabulary test.

Research questions

Three research questions (RQs) guided our study:

RQ1: Is there a relation between online gaming and L2 English vocabulary and listening comprehension?

RQ2: What gaming preferences are reported?

RQ3: Does gaming frequency seem to play a role for vocabulary size? If so, how?

Our aim is twofold: to see whether there is a relation between online gaming on the one hand and vocabulary outcomes and listening comprehension on the other, and to investigate vocabulary items more closely in relation to gaming preferences.

Methodology

Participants and material

Data for this study were collected from participants ($N = 56$, aged 11–12) in three 5th-grade classes at two schools in different Swedish cities; 52 make up the final sample (23 girls, 29 boys, see below). Written forms of consent were collected from all participants and their caregivers prior to data collection.

We collected three datasets. The first was a short questionnaire about EE developed by Elke Peters (KU Leuven, Belgium) with the help of the first author. It included questions about how often learners

- watch English language tv series, films, cartoons, documentaries etc.;
- play video games in English;
- listen to English songs;
- watch/listen to YouTube clips/videos in English;
- speak or write in English with family, friends or online; or
- read in English (books, e-books, newspapers, magazines, internet etc.).

They answered by ticking one of four response options: *never*, *rarely*, *often*, or *always*. In addition, they filled in information about preferred programs, games and so forth.

English receptive vocabulary knowledge was measured at the level of meaning recognition, using the Picture Vocabulary Size Test (PVST, Anthony & Nation, 2017). The test provides estimates of knowledge of word families from the 6,000 most frequent English word families and has previously been used successfully with this age group in Belgium (Puimège & Peters, 2019).

While the PVST can be answered digitally, we used paper-based response sheets and a PowerPoint presentation of the PVST with embedded sound (cf. Puimège & Peters, 2019). In short, test-takers viewed four pictures projected on a screen and heard a voice reading a sentence. The target word and the sentence were on the sheet, along with numbers corresponding to the pictures on the screen (and if a word was unknown, they were instructed to circle the question mark), see Fig. 1.

The PVST comprises 96 words. When interpreting the scores, one correct answer corresponds to a vocabulary size of 62.5 words (Anthony & Nation, 2017). By multiplying the total score with 100, we get an estimated vocabulary size (e.g., 50 correct answers \times 62.5 = 3,125 English word families). To measure listening comprehension, we used a freely available English national test aimed at learners in the 6th grade in Sweden called 'My friend' (max: 23; NAFS Project, 2021).

Since our focus is on the role of gaming for learning, in our analyses, only participants for whom all datasets could be collected and who reported gaming (*rarely*, *often*, or *always*) were included ($N = 52$). This sample was divided into two gaming groups: Group 1, playing *rarely* or *often* ($n = 26$) and Group 2, *always* ($n = 26$) (see Fig. 2).

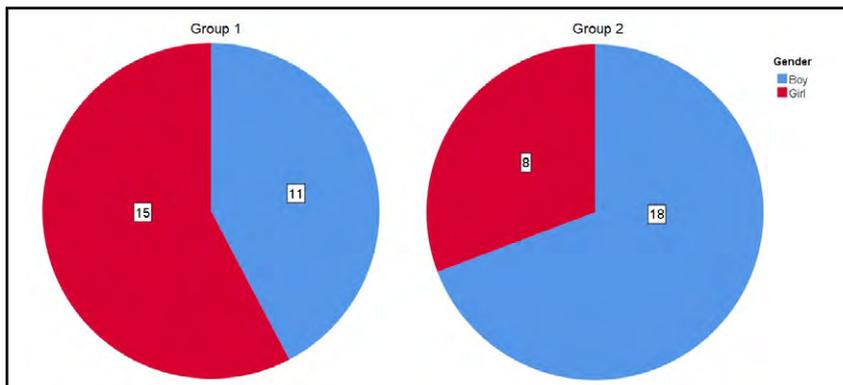
Analytical procedures

Quantitative data were analyzed using inferential statistics. We used a mixed method to analyze gaming preferences by counting all game titles mentioned (frequencies) and combined that with coding each game title as either singleplayer (SP) or multiplayer (MP) (cf. Sundqvist, 2019).

Figure 1
PVST response sheet.

Shell: It's a shell.	1	2	?
	3	4	
Quiet: She's quiet.	1	2	?
	3	4	

Figure 2
Pie charts of Groups 1 and 2, with gender distribution.



Findings & discussion

Gaming, vocabulary and listening comprehension

There was a statistically significant positive correlation between gaming frequency and the PVST score at sample level ($r_s = .462$; $p < .001$). The PVST mean was 60.54 points (of 96; SD = 12.85), which corresponds to knowledge of 3,784 word families on average, which must be regarded as large considering the learners' age. The minimum score was 32 (2,000 word families) and the maximum 87 (5,438), so the range of receptive vocabulary size knowledge was broad.

When comparing the groups' scores, Group 2 (*always*) had a significantly higher mean score (66.19, SD = 11.70) than Group 1 (*rarely, often*; 54.88, SD = 11.55; $p < .001$). The effect size was large (eta squared = .197). In short, we can rule out chance as an explanation of the difference between the groups, and gaming is clearly linked to vocabulary learning.

For the listening test, the total mean was 17.5 (SD = 4.90). There was a weak but non-significant correlation with gaming frequency ($r_s = .122$; $p = .387$) and no difference between the groups.

As expected, vocabulary correlated positively with listening – a high score on the PVST often means a high score also on listening. While this correlation was evident for both groups, it was more pronounced for the most frequent gamers (see Figures 3 and 4; note the 'steeper' fit line for Group 2).

This is a small-scale study and we cannot make any claims regarding causality, but the stronger correlation for Group 2 is nevertheless interesting. We can only speculate, but it is possible that for young learners who invest so much time in gaming (they responded "always", after all), it may enhance the development of both their vocabulary knowledge and comprehension skills.

Gaming preferences

Regarding the participants' reported gaming preferences, most games mentioned were multiplayer (MP) games. Only nine of 35 reported titles were single player (SP) games. The three most popular games were *Roblox*, *Minecraft* and *Fortnite* (Table 1).

We observed some notable differences. First, Group 2 reported 26 games (20 MP), while Group 1 reported 16 games (14 MP). Since Group 2 plays more often, it makes sense that they would list more titles. Many of these games, such as *Among Us*, *Fortnite*, and *Rainbow Six: Siege*, require active (oral) collaboration with others in order to succeed (see game titles with hashtags in Table 1). Based on our experience, in Group 1, five of the MP titles require oral communication for gameplay to be successful, while the corresponding number for Group 2 is twelve. It is thus possible that learners in Group 2 have more opportunities for speaking English, which may facilitate L2 development in general, and vocabulary learning in particular. The higher overall PVST score for Group 2 might depend on this need for successful L2 communication to win

Table 1

Games by Groups 1 and 2 (blue = SP; orange = games supporting MP in any form).

Group 1 (<i>rarely, often</i>)
Roblox* (9)
Minecraft* (6)
Fortnite*# (3)
Grand Theft Auto (GTA)*# (3)
Counter Strike: Global Offensive (CSGO)*# (1)
Danganronpa (1)
FIFA (1)
Hayday*# (1)
NHL 21 (1)
Pro Evolution Soccer (PES) (1)
Plants vs. Zombies: Garden Warfare 2 (1)
Red Dead Redemption 2 (1)
Rocket League*# (1)
The floor is lava (1)
Supercross 3 (1)
Sims 4 (1)
Group 2 (<i>always</i>)
Minecraft* (9)
Fortnite*# (3)
Roblox* (3)
Terraria (2)
Valorant # (2)
At Home Alone (1)
Big Fighting (1)
Call of Duty: Black Ops Cold War # (1)
Counter Strike: Global Offensive (CSGO)*# (1)
Doom # (1)
Genshin Impact (1)
Grand Theft Auto (GTA)*# (1)
Hayday*# (1)
Mario (1)
NBA 2K (1)
Need for Speed (1)
Overwatch # (1)
PewDiePie: Legend of Brofist (1)
Pokémon (1)
Rainbow Six: Siege # (1)
Rec Room (1)
Rescue Team: Planet saver (1)
Rocket League*# (1)
The Crew 2 (1)
War Thunder # (1)
Among Us # (1)

Note. *Mentioned by both groups. #Games requiring oral communication for successful gameplay. (Number) Times mentioned in a group.

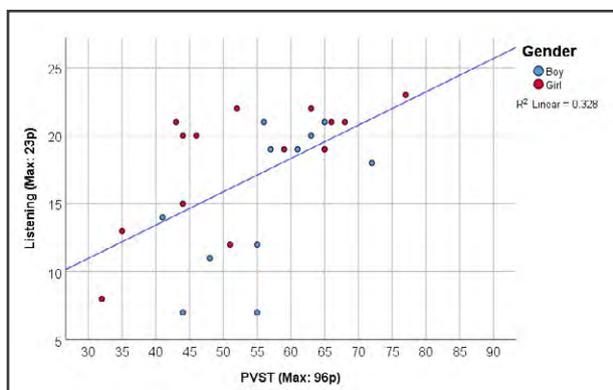


Figure 3
Scatter dot diagram, PVST and listening, Group 1 (*rarely, often*).

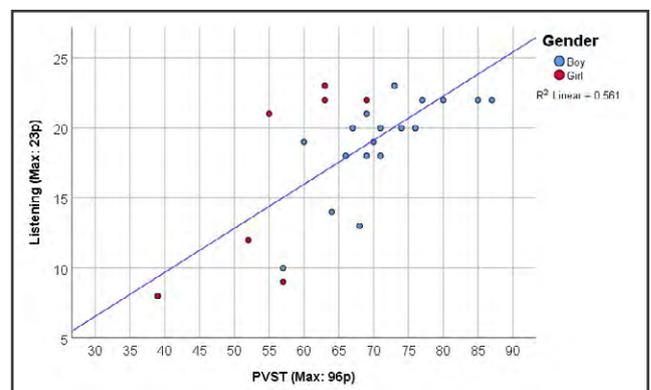


Figure 4
Scatter dot diagram, PVST and listening, Group 2 (*always*).

games. This idea is supported by Hannibal Jensen's (2017) finding of the significant correlation between gaming with oral and written English input and vocabulary scores. Similarly, Sylvén and Sundqvist (2012) suggest that games where oral interaction is an inherent part of the game design also benefit the learning of vocabulary.

PVST words with significant group differences

Other points of interest are words for which there were significant differences between the groups and words both groups knew well. All participants knew *animal, attack, check, grass, grasshopper, hobby, house, table* and *video*. Most of these are concrete and common words. However, 21 words yielded group differences (Fig. 5).

These words span from very common (*by, beneath*) to arguably less common ones (*canary, sardine*). Notably, the majority of the words is seemingly *not game specific*, even though *award, rotate* and *thrust* are words that gamers likely have come across when gaming. *Rotate* also often occurs in tutorials about how to move the character with a joystick, and *awards* tend to be provided when game tasks are completed. *Thrust* could potentially also appear as an instruction or action command. However, most of these words are everyday nouns, verbs and prepositions without a game connection. Five are Swedish cognates (*expedition, horizon, object, sardine, souvenir*) but that does not seem to have facilitated deciphering of word meanings very much. Finally, Group 2 clearly performed the best.

Implications and concluding remarks

There are several pedagogical implications of this study. As mentioned, collaborative work tends to be part of MP game designs and is necessary for game success, and apparently, many young gamers seem to like that. Thus, English teachers may use the same principle in the classroom and use lesson activities that require collaboration. While some teachers choose to introduce digital games in the classroom, for instance, to promote oral communication (for an example of using *Minecraft*, see Henry, Sundqvist, & Thorsen, 2019), a word of caution is needed. Students who identify themselves as gamers may *not* want to use games for formal L2 learning; non-gamers may be more willing to do so (see Reinhardt et al., 2014). Altogether, it is a balancing act for teachers – acknowledge (and encourage!) students' engagement in EE activities (including gaming), but do not intrude too much on their personal sphere. Rather than playing digital games in the classroom, teachers may want to use valuable lesson time to compensate for what is generally not learned outside school (e.g., academic vocabulary).

Teachers who would like to learn more about their students' Extramural English habits are strongly encouraged to consider what methods or tools to use for this purpose. A suitable way forward can be to start mapping students' EE interests using logs or language diaries (for ideas, see Sundqvist & Sylvén, 2016) – and it

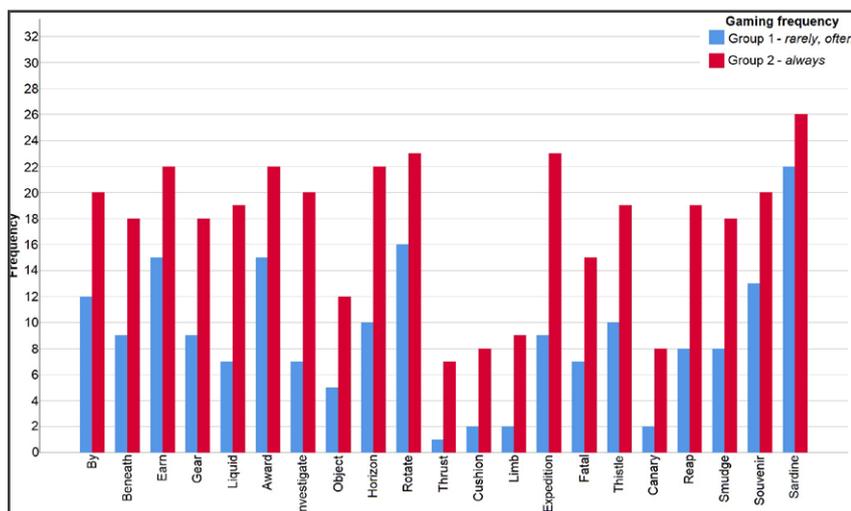


Figure 5
Words with significant differences between Group 1 (rarely, often) and Group 2 (always).

We can only speculate, but it is possible that for young learners who invest so much time in gaming (they responded “always”, after all), it may enhance the development of both their vocabulary knowledge and comprehension skills.

might be interesting for teachers to also think more about their own EE habits at the same time. What do teachers spend time on, and why?

We would also encourage classroom work where ‘gamer students’ get to demonstrate a game they like for the class. The teacher can then follow up by highlighting differences between informal and formal English, written and spoken English, and so forth – in short, language awareness-raising work. Vocabulary, multiword units, and idiomatic expressions can be put on the whiteboard, and gamer students can preferably help to translate and explain. Such an activity may also open up for important discussions of core values, if demonstrated games convey controversial content. In addition, when it comes to teachers who themselves play digital games, what are their preferences and why? Do they play the same types of games as their students, for example? For teachers who are *not* familiar with gaming, it might be relevant to contemplate on whether they would be willing to learn to play – and why/why not.

Naturally, motivation is always crucial and digital media such as games have the potential of strengthening learners’ own desire to learn. Teachers who acknowledge the benefits of EE activities, gaming and others, can potentially teach and supervise students more efficiently.

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