Learning languages is a social activity – and so is playing computer games. Many parents would probably object to the latter part of the statement, having experiences of their teenager not joining the rest of the family for dinner due to a quest, a dungeon, or a raid in World of Warcraft. But while being kept from family by a computer game may seem asocial, a teenager immersed in World of Warcraft is in fact meeting with people 'of all ages, countries, and value systems' (Gee, 2007b, p. 182) in an international virtual world. In this chapter, our aim is to show that playing computer games indeed facilitates second language (L2) acquisition. In order to do so, we present three studies, each of which shows mounting evidence for the positive role of extramural English in general, and computer games in particular, in the acquisition of English vocabulary by Swedish learners. We will show how gender, age, and the type of gaming affect acquisition, and we discuss implications of these for teaching practice.

Theoretical background

In research on gaming, two terms are used more or less interchangeably: video games (see, e.g., Gee, 2007b; Rankin, Gold, & Gooch, 2006a) and computer games (see, e.g., Begg, Dewhurst, & Macleod, 2005). In line with the title of this book, we adopt the latter, computer games, and use it in reference to games played on computers as well as those played on video game consoles (e.g., PlayStation, Nintendo, and Xbox). Computer games can be played either online or offline and can range from fairly simple text-based games to those that incorporate complex...
graphics and virtual worlds, populated by many players simultaneously. In fact, with the growth of broadband Internet access, thousands of players can meet online at the same time in virtual worlds to play games together. When many players unite in a particular game, the game is referred to as a **massively multiplayer online game** (MMO) (e.g., Linderoth & Bennerstedt, 2007). MMOs have become immensely popular in the developed world, evidenced when Blizzard Entertainment, Inc. in October 2010 announced that the subscriber base for their **massively multiplayer online role-playing game** (MMORPG) **World of Warcraft** exceeded 12 million players worldwide.

According to biannual reports from the Swedish media council, gaming is an increasingly popular spare time activity among Swedish children and youths (Medierådet, 2005, 2008, 2010b). In fact, even toddlers are reported to use computers rather frequently (Medierådet, 2010a). In sum, gaming (and computer use in general) is undoubtedly part of popular culture today, in Sweden and elsewhere; Viberg (2000) even argues that the influx of English in Swedish society is so great that English might be perceived as a **second** rather than as a **foreign** language. From the perspective of L2 acquisition, gaming becomes a relevant object of inquiry since the default language of a popular game such as **World of Warcraft** is English (Waters, 2007), something which thus forces learners to communicate in their L2.

At this point, we would like to comment on two particular games, **World of Warcraft** (WoW) and **The Sims**. As mentioned above, WoW is a game in which thousands of players simultaneously inhabit the same online game world. Often, smaller groups play different types of characters with different skills (Hunter, Warrior, Paladin, Druid, Priest, and so on) and will cooperate to achieve objectives, for instance in dungeons or raids. Moreover, players typically interact with one another both in the actual game and via various types of chat (Gee, 2007b; Lindh, 2009); it is thus a game that encourages both production (writing, speech) and consumption (reading, listening) (Gee, 2007a; Sundqvist, 2009). In contrast, **The Sims** is a single-player, offline, strategic life-simulation game. It should also be emphasized, however, that single-player games may involve people in joint play, sharing, and collaboration; for example, on websites, in chat rooms and game guides, many produced by players themselves (Gee, 2007a, p. 133). Thus, although **The Sims** is a single-player game, it can include interactive aspects as well. According to Gee (2007a), both MMOs and single-player games offer opportunities for learning in highly motivating contexts. Nevertheless, from an L2 acquisition perspective, some crucial differences between **WoW** and **The Sims** need to be addressed. In **WoW**, game texts are only available in English, whereas several translations (including Swedish) are available in **The Sims**. Furthermore, the amount and type of text a player has to read to participate in **WoW** is much larger and more demanding than the texts used in **The Sims**. Finally, while social interaction is neither forced upon players of **WoW** nor forbidden for players of **The Sims**, it must be emphasized that the **WoW** game design makes social interaction an important and integral part of the game itself. These differences are important to bear in mind when reading the results of our studies.

Among the first linguists to see the potential of computer games for learning and literacy was James Paul Gee. Gee (2003) identifies 36 learning principles involved in gaming. Several of these principles are closely related to second language acquisition (SLA) theory and we would like to highlight some of them here. First, according to the ‘Active, Critical Learning Principle’, all aspects of a computer game are set up to encourage players/learners to be active and critical rather than passive (p. 207). Second, the ‘Practice Principle’ states that learners practice (use language) in a context (a compelling virtual world) where practice is enjoyable rather than boring, where learners experience ‘ongoing success’, and get to spend much time on task (p. 208). Together, these two principles align very well with SLA theory on the importance of interaction in L2 acquisition (Gass & Mackey, 2006; Long, 1981; Riggenbach, 1998), the importance of target language (TL) input and output (Long, 1981; Swain, 2000), and the importance of task-based learning (Ellis, 2003; Reinders, 2006). That interacting in the TL mediates acquisition has also been shown in empirical studies (Iwashita, 2001).

A third principle is called the ‘Regime of Competence’ Principle’ (Gee, 2003, p. 209). When engaged in gaming, a learner has several opportunities to operate within – but at the outer edge of – his or her ability, so that the tasks at hand are perceived as challenging but not undoable. This is closely related with sociocultural theory, in particular Vygotsky’s (1926/1999) zone of proximal development, which refers to the range of tasks that children can complete independently and those for which they need assistance from a more able person, such as a more-skilled child (here a more-skilled gamer) or an adult/teacher. Furthermore, the ‘Regime of Competence’ Principle links to Krashen’s (1985) input hypothesis, which states that a learner acquires an L2 by understanding input containing structures that are slightly beyond the learner’s current competence. That is, by focusing on meaning (what is said in a computer game is more important than how it is said) and
through the extralinguistic context (such as game graphics), L2 acquisition is facilitated. Expressed differently, taking part in a computer game in L2 English entails understanding its meaning. Thus, a player is likely to be highly motivated (cf., Julkunen, 2001) to learn specific game terminology. Marton (2006, p. 528), in his discussion on transfer, argues that 'what the learner learns in some situations might enable her to do something different in other situations thanks to perceived differences (and similarities) between situations'. This means that what is learned in a computer game might carry over into what is learned in the L2 English classroom. In fact, Gee (2003, p. 211) lists a 'Transfer Principle' as well.

Another example is the 'Intuitive Knowledge Principle', which means that intuitive or tacit knowledge builds up while gaming, thanks to repeated practice and experience, and such knowledge is honored in the gaming context (Gee, 2003, p. 210). An empirical study from Finland (Pilrainen-Marsh & Tainio, 2009) shows that the Intuitive Knowledge Principle holds. The participants (boys, aged 10–14) developed their linguistic and interactional competence in English thanks to the repeated lexical and prosodic features that were integral features of the game they played (Final Fantasy X). Moreover, this specific principle connects with the discussion about implicit and explicit learning within SLA, as well as with verbal versus informal learning, and various forms of naturalistic learning. In N. Ellis' (1994) overview of implicit and explicit language learning, he states that:

'Implicit learning is acquisition of knowledge about the underlying structure of a complex stimulus environment by a process which takes place naturally, simply and without conscious operations. Explicit learning is a more conscious operation where the individual makes and tests hypotheses in a search for structure.' (p.1)

As a consequence, he continues, the acquisition of knowledge can take place (a) implicitly, a non-conscious/automatic abstraction of the structural nature of input via experiences, in our case that would be the structure of the TL English via frequent exposure to TL forms provided by the game, (b) explicitly, through selective learning; here where players, thanks to the English input provided by the computer game, build hypotheses and test them while playing, or (c) explicitly via given rules (such as in an L2 English classroom).

Gaming can be viewed as an example of naturalistic learning. In SLA, several terms are used to describe such learning, for instance *naturalistic language learning, self-directed naturalistic learning, and out-of-class learning* (see, e.g., Benson, 2001; Benson & Reinders, 2011; Lamb, 2004; Yi, 2005). Forsman (2004) proposes yet another term, *unintentional learning*, and when focus is specifically on the acquisition of vocabulary, *incidental learning* is frequently used (see, e.g., Laufer & Hulstijn, 2001; Sylvén, 2004). Sundqvist (2009, p. 25) suggests an umbrella term, *extramural language learning*, which emphasizes (a) that no degree of deliberate intention to acquire the TL is necessary on the part of the learner, even though deliberate intention by no means is excluded, and (b) that the learning takes place extramurally, that is, outside of the classroom. Whichever term one adopts, it is essential to acknowledge that when the actual learning process takes place in a non-instructional context outside of school (cf., through gaming), it is an example of informal learning. In the following, we use the term *extramural English*.

Consequently, learners who play computer games in L2 English in their spare time are engaged in extramural English. They use both written and spoken English, and *they are highly motivated to make progress in the game* (Astrén, 2010; Linderoth & Bennerstedt, 2007). Motivation is central to all learning in general and to language learning in particular (Dörnyei, 2001). In turn, motivation is driven by a multitude of factors (see, e.g., Dörnyei, 2001; Gardner, 2006; McDonough, 2007; Pintrich & Schunk, 1996; Ryan & Deci, 2000). From a motivation theory perspective, what makes our pilot study (see below) particularly interesting is the fact that, while our main focus is on language learning, measured by means of learning outcomes in school, our empirical data are primarily based on the extramural language activities of our informants.

In motivation theory, several dichotomies, or clines, are used. Perhaps the most well-known of these is the dichotomy between extrinsic motivation (i.e., driven by external factors, such as grades, appreciation) and intrinsic motivation (i.e., driven by individual, internal factors, such as pleasure and satisfaction) (Deci & Ryan, 1985). This can be compared with the similar dichotomous pair of social and personal motivation as set out by Weiner (1994), where the former has to do with being a part of society and the latter has more to do with the internal needs of the individual. Deci and Ryan's (1985) self-determination theory takes its point of departure in the strict dichotomous terminology, and proposes a cline ranging from self-determined (at the most intrinsic end of the scale) to controlled (at the most extrinsic end), realizing that in the intrinsic-extrinsic relationship, one can lead to the other (Ryan & Deci, 2000). For the purpose of our article, we assume that learning at school involves mostly extrinsic or social motivation, while learners'
extramural exposure to English is activated more by intrinsic or personal motivation.

In school, language arts subjects compete with other subjects for time and attention. In Swedish secondary school, students study as many as 17 different subjects, making time a scarce commodity. When choosing what to spend time on, the more motivating alternative tends to win, which makes motivation a pivotal factor (Dörnyei, 2001). From having been essentially a school subject, at least in a small language community such as Sweden, English is now a part of daily life, especially for those who are active on the Internet. Thus, extramural linguistic activities are part of the L2 acquisition process and therefore essential to study in relation to intramural school learning activities.

We have now discussed gaming and SLA, and to some extent also described the relationship between the two and the special role motivation has. Before we end this section with a few words on L2 vocabulary acquisition, we would like to stress that, while language learning is both a cognitive and a social activity, so is gaming. We return to Gee (2003, p. 212) and his ‘Affinity Group Principle’, which highlights the cognitive and social sides of gaming: groups are formed where members bond primarily through shared endeavors, goals, and practices. Such groups are good examples of the positive effects team motivation might have (Sweezy, Meltzer, & Salas, 1994).

Vocabulary is widely recognized as central to any language acquisition process (see, e.g., Boyd Zimmerman, 1997; Nation, 2001; Schmitt & McCarthy, 1997). Consequently, it is one of the most relevant and fruitful areas to focus on when investigating the acquisition process among L2 learners. With regard to vocabulary acquisition and gaming, Gee (2007a, pp. 143–144) argues that there are two ways of understanding words: a verbal or a situated understanding. The verbal understanding of a word is a top-down process that ‘implies an ability to explicate one’s understanding in terms of other words or general principles, but not necessarily an ability to apply this knowledge to actual situations’, whereas the situated understanding is a bottom-up process that ‘implies the ability to associate the word with specific images, actions, experiences, or dialogue in such a way that one knows how to apply the word in specific contexts to solve problems or accomplish goals’. This suggests that playing computer games can promote situated learning of words, which has also been shown in a US small-scale study (Rankin et al., 2006a). The study revealed that intermediate and advanced L2 English students increased their vocabulary by 40 per cent as a result of playing EverQuest 2 (a MMORPG). They conclude that MMORPGs can provide motivation and adequate language learning support for L2 learners. There are also other recent studies on L2 acquisition and gaming (see, e.g., deHaan, Reed, & Kuwada, 2010; Zheng, Young, Wagner, & Brewer, 2009), but very few aimed at young learners, which we hope to partly compensate for with our pilot study.

Three empirical studies

Our chapter is based on data from three separate studies investigating extramural English activities, including the use of computer games, and their relation to English vocabulary acquisition by Swedish learners. In the subsections below, we briefly describe each study and present the results that are pertinent to our topic, that is, computer games and vocabulary acquisition. The studies are presented in chronological order: Sylvén (2004), followed by Sundqvist (2009), and finally our joint pilot study from 2010.

Teaching in English or English Teaching?
The first study, Teaching in English or English Teaching? – On the effects of content and language integrated learning on Swedish learners’ incidental vocabulary acquisition (Sylvén, 2004), was a two-year longitudinal study of content and language integrated learning (CLIL) and non-CLIL students at upper secondary school level (N = 363, 99 CLIL and 264 non-CLIL students). The main aim was to investigate what effect, if any, CLIL has on the incidental acquisition of vocabulary. In this study, CLIL is defined as the use of English as the medium of instruction in content subject classrooms.

Students were tested three times, first at the beginning of grade 10 (first year of upper secondary level and the first year of CLIL), next at the end of grade 10, and finally at the end of grade 11. Non-CLIL students were tested on the same occasions in order to compare their performance. The test battery used on each of the three test occasions consisted of four different types of vocabulary test: (1) a self-report test (based on Paribakht and Wesche’s (1997) Vocabulary Knowledge Scale), (2) a words-in-context test, (3) a multiple choice test, and (4) a cloze test. There was also a questionnaire at the beginning and at the end of the study, dealing with the students’ backgrounds, attitudes towards school, personal interests, and reading of English texts outside of school, including reading ordinary books as well as texts used in role-playing board games and computer games.
Table 9.1 Average score, group, and test round (TR)

<table>
<thead>
<tr>
<th>Group</th>
<th>TRI</th>
<th>TRII</th>
<th>TRIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIL</td>
<td>128</td>
<td>149</td>
<td>160</td>
</tr>
<tr>
<td>Control</td>
<td>110</td>
<td>119</td>
<td>122</td>
</tr>
</tbody>
</table>


The main results, illustrated in Table 9.1, indicated that CLIL students acquired a larger English vocabulary than their non-CLIL peers ($p < .01$). However, the data also showed that the CLIL students had a significantly larger English vocabulary already from the start ($p < .01$). Male students in both the CLIL and the non-CLIL groups outperformed their female peers in all test rounds, but the gender gap in the CLIL group decreased throughout the study. In the third test it was shown that CLIL had a certain impact on students’ vocabulary. However, the factor that proved to have the statistically most central impact was the reading of English texts outside of school ($p < .01$). One explanation for the gender differences in the result was found here: 59 per cent of the males read outside of school whereas only 36 per cent of the females did so. Interestingly, CLIL seemed to spark a higher interest in reading English texts; at the outset of the study 54 per cent of the CLIL students said that they engaged in such activities outside of school and at the end of the study that figure had increased to 60 per cent. The impact of out-of-school L2 input raised several further questions (Sylvén, 2004, p. 220): Are all types of text, including non-fiction books, magazines, and websites, conducive to vocabulary learning? Are some more beneficial than others? What types of texts do students read? Questions like these led to the development of the language diary (Sylvén, 2005, 2006, 2007), which was implemented in Sundqvist (2009), the second study of relevance to this chapter.

**Extramural English Matters**

The second study, Extramural English Matters: Out-of-School English and Its Impact on Swedish Ninth Graders’ Oral Proficiency and Vocabulary (Sundqvist, 2009), was a one-year longitudinal study carried out in 2006–2007. The study focused on learners (N = 80; 36 boys, 44 girls) in ninth grade (aged 15–16) and the impact of extramural English on their oral proficiency and vocabulary skills. As was previously mentioned, the term *extramural English* was broadly defined and refers to any type of contact that learners have with English outside the classroom.

Extramural English was measured with the help of interviews, a questionnaire and two one-week language diaries. In the diaries, the learners noted how much time they had spent on seven activities (reading books, reading newspapers/magazines, watching TV, watching films, surfing the Internet, playing computer games, and listening to music) and a final open category. Vocabulary was measured with two written vocabulary tests, adapted versions of the Productive Levels Test (Laufer & Nation, 1999) and the Vocabulary Levels Test (Nation, 2001).

Data from the language diary showed that the time learners spent on extramural English correlated positively and significantly ($r = .357; p < .01$) with the size of their vocabulary. Similar to what was found in Sylvén (2004), the boys scored significantly higher than the girls on the vocabulary tests. Backward linear regression analysis revealed that some extramural activities were more important than others for vocabulary acquisition. Activities that required the learners to be productive and rely on their language skills (i.e., playing computer games, using the Internet, and reading) had a greater impact on vocabulary acquisition than activities where learners could remain fairly passive (listening to music or watching TV/films). Since the boys spent more time on the productive activities than the girls, extramural English had a greater impact on their vocabulary development than on that of the girls. In particular, the boys spent significantly more time than the girls on two of the activities, namely, on playing computer games (7.9 hours/week vs. .7 hours/week; $p < .01$) and using the Internet (1.1 hours/week vs. .4 hours/week; $p < .05$). The highest reported values (hours/week) were 40.1 for gaming and 6 for using the Internet.

As for gaming, the boys and the girls did not only differ in terms of the *amount* of time spent on playing, but also in the *types* of game played. The boys preferred playing WoW and the results clearly indicated that they benefited from doing so (cf. Linderoth & Bennerstedt, 2007; Piirainen-Marsh & Tainio, 2009; Rankin et al., 2006a). In contrast, the girls preferred The Sims, but they did not play as much as the boys, and the girls’ gaming did not contribute significantly to their L2 vocabulary acquisition. Questionnaire data and the interviews corroborated these game-related findings.

**Extramural English among young learners – pilot study 2010**

The third study is our joint pilot study. It focuses on young learners (N = 244, 4–6th grade, aged 10–12) and their extramural English, and examines whether there is a relationship between what young learners do in English in their spare time and their learning outcomes in school.
In this chapter, we focus on the results for the students in grade 5 only (N = 102; 48 boys, 54 girls). Similar to Sundqvist (2009), we used a questionnaire and a language diary to measure extramural English, but no interviews were conducted in this study. The general purpose of the pilot was to try out our assessment methods and the design of the study in preparation for a future longitudinal study.

The language diary covered one week and included the same seven extramural activities (plus an open final category) as Sundqvist (2009), but its design was adapted to suit the age group. To measure the students’ learning outcomes, results from the national test of English and a vocabulary test were used. The national test consists of interaction/speaking, listening comprehension, reading comprehension, and writing components. We looked at reading comprehension scores (pass ≥ 11; max = 31) as well as pass-fail rates for the other components. We designed the vocabulary test ourselves using test items from the levels tests available at the Compleat Lexical Tutor homepage (http://www.lexxtutor.ca/). The test included three parts:

1. Recognition (1000 word level)
2. Recognition (2000 level)
3. Production (2000 level)

In the following we report on the results from the language diary and the questionnaire. After that, we give the results of the examination of extramural English in relation to learning outcomes.

All participating students had a computer at home and access to the Internet. The language diary revealed that the fifth graders spent on average 9.4 hours/week on extramural English activities, in total (see Table 9.2). Playing computer games was the most popular activity. We would like to emphasize that individual variation was large. In terms of the total amount of time spent on extramural English activities, some students reported none, whereas others reported up to 40 hours. In the latter cases it is very likely that students engage in two activities concurrently (such as listening to music while using the Internet). With regard to gaming, the highest reported value was 22.7 hours.

When we analyzed language diary data by gender, we found that the boys spent more hours per week (10.6) than the girls (8.4) on extramural English activities, but this difference was non-significant. For each of the various activities, both the boys’ and the girls’ values were fairly similar, but there was one exception: playing computer games. The boys played 4.4 hours per week on average, which can be compared with 1.1 for the girls, a statistically significant difference (p = .01). As for gaming, the results obtained from the questionnaire corroborated the findings from the language diary data. For example, with regard to gender differences, four out of five boys responded that they play computer games, while only two out of three girls indicated they did. In addition, similar to what was found in Sundqvist (2009), the boys and the girls generally played different types of games. Both in their diaries and questionnaires, the boys had often noted playing World of Warcraft, Call of Duty and/or Counter-Strike, whereas The Sims was most popular with the girls. A game that was listed by both boys and girls was Restaurant City.

In order to analyze the relationship between extramural English and learning outcomes, the sample was first divided into two groups, depending on whether or not the student had passed all parts of the national test. As it turned out, among the 86 students who handed in their language diary, 76 passed all parts of the national test (Group Pass) and ten failed one or more parts of the test (Group Fail). Then, for both these groups, the mean values of extramural English activities were compared with the help of an independent samples t tests. Group Pass students spent more time in total on extramural English (10.0 hours/week) than Group Fail did (5.2), even though it should be noted that this difference was non-significant (p = .072). Moreover, Group Pass also spent more time on two of the activities, namely on playing computer games (2.9 hours/week, as opposed to .3 for Group Fail) and on using the Internet (1.3 hours/week as opposed to .1). For the remaining six activities, values were very similar. Despite the fact...

<table>
<thead>
<tr>
<th>Extramural English activity</th>
<th>Mean (hours/week)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playing computer games</td>
<td>2.6</td>
<td>4.3</td>
</tr>
<tr>
<td>Watching TV</td>
<td>2.1</td>
<td>2.7</td>
</tr>
<tr>
<td>Listening to music</td>
<td>1.8</td>
<td>2.5</td>
</tr>
<tr>
<td>Watching films</td>
<td>1.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Using the Internet</td>
<td>1.2</td>
<td>2.1</td>
</tr>
<tr>
<td>Other</td>
<td>.3</td>
<td>1.0</td>
</tr>
<tr>
<td>Reading books</td>
<td>.1</td>
<td>.2</td>
</tr>
<tr>
<td>Reading newspapers/magazines</td>
<td>.0</td>
<td>.1</td>
</tr>
<tr>
<td>Total</td>
<td>9.4</td>
<td>7.9</td>
</tr>
</tbody>
</table>
that the number of Group Fail students was so small, the identified differences for playing computer games and using the Internet were almost statistically significant at the .05 level. As for the scores on the vocabulary test, the sample mean was 19 points (out of 37). Boys had a significantly higher mean score (21) than the girls (17) ($p < .05$).

Then we examined the relationship between the total amount of extramural English and learning outcomes with the help of correlation analysis (Spearman). It was possible to correlate extramural English with two parts of the test, namely with listening and reading comprehension. The analyses revealed that the total amount of extramural English correlated significantly, positively, and strongly, with both listening and reading (see Table 9.3). When the same types of analyses were performed for gender, the correlations for the girls were slightly stronger for both listening and reading (see Table 9.3).

Correlation analysis was also used to examine the relationship between extramural English and the learners' scores on the vocabulary test. At sample level, there was a positive ($r = .256$) but non-significant correlation between the vocabulary score and the total amount of extramural English. For two parts of the test, (1) Recognition and (3) Production, the positive correlations with extramural English were indeed statistically significant ($r_s = .662$, $p < .05$, and $r_s = .310$, $p < .05$, respectively).

Discussion

From the results in our three studies, patterns emerged regarding gaming, gender, and the age of the learners. These patterns are discussed below, before this section of the chapter closes with a discussion on pedagogical implications.

The importance of playing computer games at all three levels

All three studies looked at the relevance of extramural English for L2 acquisition, with an increased focus on the role of gaming in the latter two. Even though it is difficult (if not impossible) to fully know the direction of causality between any two variables, the findings presented here, as well as those in previous studies of gaming (deHaan et al., 2010; Gee, 2003, 2007a; Firainen-Marsh & Tainio, 2009; Rankin et al., 2006a; Rankin, Gold, & Gooch, 2006b; Rankin, McNeal, Shute, & Gooch, 2008; Rankin, Morrison, McNeal, Gooch, & Shute, 2009; Zheng et al., 2009), point in one direction: gaming benefits English L2 vocabulary acquisition. Admittedly, it was reading outside of school that was pinpointed as a crucial factor in incidental vocabulary acquisition in Sylven (2004); that is, at first sight that particular conclusion does not seem to align with our argument about the importance of playing computer games for L2 vocabulary acquisition. However, we have to remember that reading was broadly defined in Sylven (2004) and encompassed texts read while playing computer games. Thus already in Sylven (2004) there were implications that engagement in English activities outside of school is positive for the development of students’ vocabulary. In both Sundqvist (2009) and our pilot study, these implications are mounting. However, further studies are needed in order to describe the relationship between playing computer games and vocabulary acquisition in more detail; suffice it to conclude here that such a relationship actually exists. Moreover, as indicated by the scores on the vocabulary tests among ninth and fifth graders, there might be reason to believe that gaming promotes both learners’ receptive and productive vocabulary. It is, however, necessary to discuss the reliability of the language diary, from which game-related data were drawn. Naturally, the informants had to estimate when they filled out their diaries, because it is difficult to remember exactly how much time was spent on certain activities; thus, a certain margin of error seems unavoidable. We would like to emphasize, though, that questionnaire data corroborated the language diary data. Consequently, we feel the collected data are reliable and should render valid conclusions.

Gender differences

When we compared the results from the three studies, we discovered a pattern of gender differences. First, despite the fact that girls in general do better in languages than boys (Björnsson, 2005; R. Ellis, 1994; Klapp Lekholm, 2008), in our three studies, the boys outperformed
the girls in terms of vocabulary – 'the bedrock of L2' (N. Ellis, 1994, p. 11). Second, the boys spent more time on extramural English than the girls, particularly on gaming. If we accept that involvement in extramural English influences learner language in a positive way, the boys' extramural English habits have a key function in their L2 acquisition. It seems very likely that, had the boys not taken advantage of the various opportunities for engaging in extramural English activities the way they did, they would have been worse off, both overall and with regard to their L2 vocabulary. On the other hand, had the girls chosen to engage in the same extramural activities as the boys – and to the same extent – it seems very likely that they would have stayed ahead of the boys also in terms of vocabulary. A third gender difference relates to the type of game boys and girls favored. At all three levels, the boys were more interested in role-playing games that involved more than one player (e.g., WoW), whereas the girls preferred The Sims (in both fifth and ninth grade). Since MMORPGs such as WoW are cognitively and linguistically more demanding than The Sims, we argue that the boys' favored type of gaming is more beneficial for L2 acquisition than the girls'.

The age of the learners

Our three studies deal with learners of different ages; the first 16- to 18-year-olds, the second 15- to 16-year-olds and the third 11- to 12-year-olds. Interestingly, the correlation between extramural English and learning outcomes gets more convincing the lower the age of the informants. One plausible explanation is that the first study is based on data collected around the turn of the century, the second in 2006-2007 and the third in 2010. Thus, almost ten years have passed between the first and the last study, and even more years if we consider in what year the informants in the first study actually were in fifth grade. During this period of time, there has been an unprecedented rate of development in the virtual world. In the year 2010, at least in Sweden, learners engage with computer games, the Internet and web-based social networks at a very low age. The aforementioned media council recently reported that as many as 67 per cent of 2- to 5-year-olds use computers (Medierådet, 2010a, p. 18). The fact that the initial questionnaire included in Sylvén (2004) did not even mention computer games as an activity on its own, in comparison with the very prominent role computer games play in our pilot study where fifth graders were even asked to specify the name of the games they play, gives an indication of the rate of this change in computer habits. The number of hours spent on extramural English among fifth graders was about half of what was reported among ninth graders in Sundqvist (2009), but we need to consider the fact that these young learners start their extramural English at a relatively low level of proficiency in English. Given the established impact of motivation on learning (Deci & Ryan, 1985; Dörnyey, 2001), one conclusion to be drawn from these results is that also very young learners probably benefit considerably from extramural English.

Pedagogical implications

Considering the findings presented in this chapter, it is evident that extramural English must be acknowledged as an important factor in L2 acquisition and, consequently, it has pedagogical implications that need to be addressed. First of all, today L2 learners enter the English classroom with varying experiences of extramural English. For some, the use of English outside of school is so common that English is indeed perceived as a second language (Viberg, 2000), whereas for others, it is literally a foreign language. With such discrepancy between learners, knowledge polarization within the walls of single classrooms becomes a huge challenge for the teachers. Unless teachers manage to bridge the gap between classroom English and extramural English, this polarization is likely to increase. However, by becoming aware of, and acknowledging, learners' extramural English habits (for example by introducing language diaries or similar tasks), teachers may pre-empt this. When teachers know more about their learners' extramural English activities, this facilitates individualized teaching (and learning) and makes it easier to meet the needs of all learners: low, intermediate, and high achievers. Thus, a crucial pedagogical implication would be to start discussing extramural English intramurally, so to speak. Such discussions would most likely increase intrinsic motivation and promote learner autonomy. Learners' own experiences and interests are always a good starting point in teaching.

A potential problem might be that teachers are unfamiliar with some of the extramural English activities that their students engage in, for example, gaming, and therefore perhaps fear addressing the topic altogether. Another might be that they feel that extramural English conflicts with an increasingly standards-driven schooling system (Halverson, 2005). Slightly more controversial is the idea that incorporating students' experiences from outside of school is difficult mainly because current school organization focuses more on social control than on learning (Squire, 2005). However, based on data and experience from
the three studies presented in this chapter, teachers should be able to relax. In general, students appreciate it when teachers (or researchers) take an interest in their extramural English habits – and they are more than willing to share what they know.

Conclusion

Based on the results presented in this chapter, and provided that learners play MMORPGs, it is possible to conclude that gaming is related to L2 vocabulary acquisition. Just as was concluded regarding EverQuest 2 (Rankin et al., 2006a), a game such as WoW supplies an authentic environment for learning where learners can practice, develop, and test their interactive skills. WoW functions as an informal arena for an immersive L2 experience. We hypothesize that not only WoW but all similar MMORPGs help learners automatize L2 use, in particular since language is such an important and integral part of such games. However, there appears to be a linguistic as well as a gender-related threshold for participation in MMORPGs. Our results indicate that weak learners are not involved in gaming at all. This is something that needs to be addressed in further studies. In addition, our results also suggest gaming as a possible gateway to language learning. For instance, the role of MMORPGs in relation to offline, single-player games is a matter which needs to be explored from the perspective of L2 acquisition. Our results show that the boys, who predominantly played MMORPGs, performed better than the girls, who predominantly played offline, single-player games. At the same time the boys spent considerably more time overall on playing. Thus, more research is needed on the relationship between L2 acquisition on the one hand and gaming on the other, taking into consideration the amount of time played as well as the types of games played.

Summing up, what a learner learns in the autonomous, self-regulated context of gaming seems to be transferred into useful knowledge and proficiency in the language classroom and lead to improved learning outcomes. That there is relationship between gaming and L2 learning seems indisputable.

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Notes

1. To us, ‘L2 acquisition’ includes foreign language learning/acquisition as well as second (third, fourth) language acquisition; that is, any language learned after one’s mother tongue (Ellis & Barkhuizen, 2005, p. 3).
3. The ‘Affinity Group Principle’ holds, at least for MMOs.
4. At the time of writing this chapter, such data were available for three of the six classes in grade 5.

References


