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GAMIFIED VOCABULARY LEARNING
Vocabulary.com in the Finnish Upper Secondary School Context

Faculty of Information Technology and Communication Sciences
Master's Thesis
April 2019

TIIVISTELMÄ

Johanna Ketola: Gamified Vocabulary Learning—*Vocabulary.com* in the Finnish Upper Secondary School Context
Pro gradu –tutkielma
Tampereen yliopisto
Englannin kieli ja kirjallisuus
Huhtikuu 2019

Tässä tutkimuksessa tarkastellaan suomalaisten lukio-opiskelijoiden käsityksiä digitaalisten oppimispelien hyödyntämisestä englannin sanaston opiskelussa ja erityisesti heidän ajatuksiaan ja asenteitaan täysin englanninkielistä pelillistä *Vocabulary.com*-ympäristöä kohtaan. Tutkimuksen tavoitteena oli myös selvittää, miten kyseinen oppimisympäristö ja digitaaliset pelit yleisesti vaikuttavat lukio-opiskelijoiden motivaatioon opetella uutta sanastoa. Lisäksi tutkimuksessa pohditaan *Vocabulary.comin* mahdollisia vaikutuksia oppimistuloksiin, verrataan *Vocabulary.com*-alustaa *Quizletiin*, joka on Suomessa selvästi tunnetumpi, ja kerrotaan opettajan kokemuksia *Vocabulary.comin* käyttämisestä osana muuta oppimisympäristöä. Pelipohjaiseen oppimiseen liittyviä tutkimuksia on viime aikoina julkaistu runsaasti, mutta Suomessa tämän tyyppisiä englannin sanastonopetukseen keskittyviä tutkimuksia ei oikeastaan ole tehty. Lisäksi tutkimuksen kohteena olevasta oppimisympäristöstä on aiemmin tehty vain yksi tutkimus, joka sijoittuu Yhdysvaltoihin. Siksi tämä opinnäytetyö tuottaa arvokasta uutta kielenopetukseen sovellettavaa tietoa ja haastaa lukijaa pohtimaan uudelleen tapoja, joilla englannin sanastoa voidaan parhaiten opettaa diginatiivien sukupolvelle.

Tutkimuksen kentällä tämä tutkimus sijoittuu pelipohjaisen oppimisen ja englannin opetuksen tutkimuksen aloille. Teoriapohjana ovat aiemmat tutkimukset, jotka käsittelevät (sanaston)oppimispelejä, pelillisyyden ja oppimisen yhteyttä, motivaatiota, flow-kokemuksia sekä englannin sanaston oppimista ja opetusta. Lisäksi teoreettisena viitekehyksenä toimii Technology Acceptance Model (TAM), jota käytetään arvioimaan sitä, miten opiskelijat vastaanottivat heille uuden digitaalisen oppimisympäristön.

Tutkimuksessa lukio-opiskelijat tutustuivat ilmaiseen *Vocabulary.com*-oppimisympäristöön, jonka muodostavat yksikielinen (englanti-englanti) sanakirja ja hieman vaativamman sanaston harjoitteluun tarkoitetut mutta melko yksinkertaiset pelit, yhden pakollisen lukiokurssin ajan (ENA2) osana kirjoittajan opetusharjoitteluun kuuluvaa opetuskokeilua. Tutkimuksessa käytetyt metodit olivat kyselyt ja havainnointi. Näin ollen tutkimuksessa hyödynnettiin sekä kvantitatiivisia että kvalitatiivisia menetelmiä, ja tulokset pohjautuvat sekä 1. ja 2. vuoden opiskelijoiden kyselyvastauksiin että opettajana toimineen kirjoittajan omiin havaintoihin kurssin aikana. Kyselyt koostuivat väittämistä, joihin vastattiin viisiportaisella Likert-asteikolla, sekä avoimista kysymyksistä, ja ensimmäisen vuoden opiskelijat, jotka testasivat *Vocabulary.comia*, vastasivat kahteen eri kyselyyn – toiseen kurssin alussa ja toiseen sen lopussa. Lisäksi ensimmäiseen kyselyyn, jossa kartoitettiin asenteita yleisemmällä tasolla, vastasi myös ryhmä toisen vuoden opiskelijoita, joten yhteensä tähän kyselyyn vastasi 50 lukio-opiskelijaa. Opettajan havaintojen apuna toimi *Vocabulary.com*-sivuston maksullinen opettajien käyttöön suunniteltu Educator Edition, jonka avulla oli mahdollista seurata reaaliaikaisesti, kuinka paljon opiskelijat pelasivat *Vocabulary.comin* pelejä ja keräsivät pisteitä, ja mitkä olivat heille oppikirjojen pohjalta tehdyissä sanalistoissa haastavia sanoja.

Tutkimuksen tulokset osoittavat, että oppimispelit ja digitaaliset pelit muutenkin koetaan yleisesti lukiolaisten keskuudessa hyödyllisiksi ja motivoiviksi, ja 2. vuoden lukio-opiskelijoiden keskuudessa yhteys oppimispelien ja motivaation välillä oli erityisen selvä. Kuitenkaan yksikielinen *Vocabulary.com* ei vaikuttanut opiskelijoiden motivaatioon yhtä suotuisasti kuin monet muut pelit, ja yhtenä syynä oli se, että se koettiin jokseenkin hankalaksi. Kolmasosa toiseen kyselyyn vastanneista 1. vuoden opiskelijoista piti kyseistä oppimisympäristöä kuitenkin hyödyllisenä, ja suurin osa sanoi, että sitä oli helppo käyttää sen yksikielisyydestä huolimatta. Pelejä pelasivat kurssin aikana erityisesti edistyneimmät opiskelijat, joten *Vocabulary.com* voi suomalaisessa lukiokontekstissa toimia hyvänä lisämateriaalina ainakin englannissa paremmin menestyville opiskelijoille. Aineistosta nousi myös esille selviä eroja tyttöjen ja poikien välillä. Tytöt ja pojat pitivät oppimispelejä yhtä hyödyllisinä, mutta muuten pojat pitivät pelaamisesta enemmän, ja niinpä myös *Vocabulary.com* (josta puuttuu tytöille usein tärkeämpi narratiivinen elementti) otettiin paremmin vastaan poikien keskuudessa.

Avainsanat: pelillisyys, oppimispelit, pelipohjainen oppiminen, digitaalinen oppimisympäristö, englannin opetus, sanaston oppiminen

CONTENTS

1. INTRODUCTION

Vocabulary knowledge has a central role in language learning, because vocabulary serves as the foundation of reading, writing and communication in any language. If then learning vocabulary is at the core of learning English, teachers should give special attention to how it could be most effectively taught to their students. Initially, my passion for digital vocabulary learning games or game-based learning environments was kindled by this thought and the fact that I have liked educational (video) games since my childhood. However, the most important reason to focus on teaching vocabulary through digital games, or gamified learning more generally, was that the use of technology as well as games, gamification and playfulness in learning are seen as part of the ongoing change in school culture in Finland because nowadays digital games have such an important part to play in the lives of children and adolescents, and games are also an excellent way to implement participatory pedagogy (Krokfors, Kangas, & Kopisto 2014, 13). This development is consistent with a wider phenomenon, the so-called "ludification of culture", that has led media scholars to "argue that video games have become a cultural medium and source of formative experiences on a par with literature, movies, or television in earlier generations" (Deterding, Dixon, Khaled, & Nacke 2011, 10; Raessens 2006). If then vocabulary is everywhere, so is digitalisation, and this thesis aims at challenging the reader to rethink the ways in which vocabulary should be taught to the new generation of digital natives that has grown in the middle of video games and the process called the ludification of culture.

The present study is, thus, located within the field of English language teaching (ELT) and the field of digital game-based learning (DGBL). My aim was, firstly, to find monolingual English-English mobile apps including vocabulary games that could be used in ELT in Finnish upper secondary schools and to test how well they work in this context. The reason behind choosing monolingual games instead of bilingual ones was that they can be used in ELT more universally whatever the first language of the learners. After I had found a few interesting apps on Google Play, I selected two of them, that were similar enough to be compared, and studied their word descriptions and suitability for learners of English for my bachelor's thesis (Ketola 2015). One of these two apps, *Vocabulary.com*, seemed to be more suitable for being used in schools, and thus, I

decided to test this app with my upper secondary school students during my teacher training year a few years later in 2018. However, in the end, due to practical reasons I could not test the mobile app with them, so the focus of my study shifted from mobile apps to the online platform of *Vocabulary.com*. I was interested in finding out how *Vocabulary.com* is received among Finnish upper secondary school students who learn English as a foreign language and what it is like to use it as a vocabulary learning tool from the teacher's perspective. I was also interested in knowing whether *Vocabulary.com* increases the students' motivation towards learning new words and whether it has any positive effect on their learning outcomes.

Abrams and Walsh (2014) have previously studied the use of *Vocabulary.com* in the English language teaching of students of roughly the same age in the U.S., and they focused on the role of games in adolescents' vocabulary development and their attitudes towards learning vocabulary. In their study, one of the study groups consisted of IB students whose first language was mostly other than English, and also in the other group the students came from very different ethnic backgrounds. I was inspired by the good results obtained by these teacher-researchers, but I wanted to find out myself, in Nunan's (1992, xii) words "to exercise caution in applying research outcomes derived in one context to other contexts removed in time and space", whether these kinds of monolingual vocabulary games or digital learning environments, and more specifically *Vocabulary.com*, could be utilised also in EFL teaching in ordinary Finnish upper secondary schools.

After presenting the objectives of this thesis in more detail, the theoretical notions central to the study will be introduced in Section 2, some relevant research will be reviewed in Section 3, and the materials and methods will be stated in Section 4. Sections 5 and 6 analyse and discuss the results of this study, and finally, Section 7 summarises the results and their implications.

1.1. Objectives of the study

As mentioned above, the objective of this master's thesis is to shed light on the use and reception of digital learning games and especially the monolingual English vocabulary learning platform and

mobile app *Vocabulary.com* and its effects on motivation and learning outcomes of students in the Finnish upper secondary school context.

The thoughts and experiences of the students I taught last spring, expressed in questionnaires, have a crucial role in this thesis. Finnish upper secondary school students are used to making use of different kinds of vocabulary learning apps that include games, but those apps often operate through Finnish language (e.g., *WordDive*). Since the language learning platforms and games operating through English (e.g., *Duolingo, Memrise, Vocabulary.com*) outnumber those that are available in Finnish, and as many studies have already established the fact that using games in language teaching has a positive effect on students' motivation and learning outcomes (Hung et al., 2018), I wanted to hear the opinions of the students I taught on the matter, but also consider the linguistic factors related to such games. I was interested especially in the attitudes of students towards those digital games that do not employ Finnish, which was the first language of most of my students, and the impact on students' motivation of not being able to take advantage of their native language in learning English. My hypothesis was that this might not have a negative impact, because many upper secondary school students are used to playing English-language games in their free time—unless games designed for the purpose of learning are seen differently from other types of games.

Compared to other vocabulary learning platforms used by Finnish upper secondary school students, an obvious advantage of *Vocabulary.com* is that, in addition to a vocabulary game called The Challenge, it includes a trustworthy English-English dictionary that is designed in a way that a learner of English could easily learn and remember the different meanings and connotations of the words (Vocabulary.com). Due to this, the use of monolingual dictionaries in Finnish upper secondary schools will also be discussed in this paper. As *Vocabulary.com* is a combination of a vocabulary game and a dictionary, no separate online dictionary or dictionary app is necessarily needed. However, although there is this and many other brilliant features, *Vocabulary.com* also has shortcomings, such as the lack of a story narrative behind the game. The different elements of the game will be analysed in order to understand how they, among other things, might have affected the students' perceptions of *Vocabulary.com*.

The major objectives being described above and summarised in the first three research questions below, the last two research questions reflect the minor goals of this study. So, The Challenge will also be compared and contrasted with *Quizlet*, which is a vocabulary learning platform used by many language teachers in Finland. Lastly, this thesis will provide information on what it was like to use the Educator Edition of *Vocabulary.com* and tips for (student) teachers on using this platform, for example, as more challenging learning material for advanced students.

1.2. Research motivation and questions

The overall motivation behind conducting this study was to improve English language teaching in Finnish upper secondary schools as well as students' learning experiences with digital language learning games and online dictionaries. The research questions aimed at obtaining this goal and the objectives explained above are the following:

1. What is the attitude of Finnish upper secondary school students towards (monolingual) digital vocabulary learning games and dictionaries, and do they find them useful?

2. What is the impact of the use of *Vocabulary.com* and digital learning games in general on first-year upper secondary school students' motivation regarding learning new vocabulary?

3. How much does the use of this vocabulary learning platform affect the vocabulary learning outcomes of students during one obligatory upper secondary school English course in the opinion of the students?

4. What is *Vocabulary.com* like compared to *Quizlet* in general and in the opinion of the students?

5. What is it like to use the Educator Edition of *Vocabulary.com*, and what are its strengths and weaknesses?

2. THEORETICAL FRAMEWORK

Using games and gamification in teaching different kinds of skills has a long history (Harviainen, Meriläinen & Tossavainen 2013, 64; Kapp 2012, 13). Nowadays, when games in the educational setting are discussed, a number of different terms are used: *educational games, edutainment, serious games, gamification, gamefulness,* and *game-based learning* among the most important. In this section, these and other central terms will be explained. In addition, the last sub-section introduces a theoretical model that will be used as the basis of analysing survey results concerning the reception of *Vocabulary.com* among upper secondary school students.

2.1. Educational games and gamification of learning

According to Whittton (2014, 15), digital games facilitate learning in several ways, the four main ways being the following: "1) games instigate active learning; 2) they create motivation; 3) they allow for meaningful play; and 4) they act as learning technologies". But what is, in fact, meant by a game or a digital game? Kapp (2012, 7) defines a game in the following way: "A game is a system in which players engage in an abstract challenge, defined by rules, interactivity, and feedback, that results in a quantifiable outcome often eliciting an emotional reaction." This definition applies to all kinds of games ranging from football and board games to video games. Whitton (2014, 16–17) is on the same lines with Kapp when she describes the core elements of a game in the context of learning: a game is a challenging activity, a task that involves doing something difficult and meaningful, which is structured with rules, goals, progression and rewards, and it is separate from the real world, because it takes place in a safe play space, and most importantly it is undertaken with a spirit of play. Whitton (2014, 17) adds that games are often also played with other people, and hence, a social dimension is usually present in games. Whitton (ibid.) also mentions the concepts of exploration and creativity, that are deeply connected to games and playfulness. Digital games are simply "games that are played on, or use, an electronic device", including various kinds of games from arcade video games to role playing or alternate reality games (ibid.).

Game-based learning is a vast field of research and learning through games can occur in a number of situations. However, the focus of this study is digital game-based learning and learning with educational games. According to Whitton (2014, 16), educational games are games that were developed for the purpose of learning in an educational setting, and Hung, Yang, Hwang, Chu, and Wang (2018, 89–90) define a learning game even more precisely: "a playful activity that is structured by rules for the pursuit of quantifiable outcomes (e.g., win states and points), and incorporates educational objectives (e.g., knowledge acquisition) as its own end." Educational games, edutainment, and serious games are alternative ways of talking about this kind of games and often about gamified learning in general. The reason behind using games in the context of learning is that they are all about action and interaction, and they also provide excitement, because "[g]ames require players to be more than spectators, and take part in the game in an active way" (Whitton 2014, 18). Thus, the use of games in education promote participatory pedagogy. New educational games are developed all the time, so besides teachers, it is very important for the game developers to know what the users of these games think about them, and do they find them useful and motivating. Although the results of previous research on students' attitudes toward playing games and using games in education have been positive, games with educational purposes have not been received equally well among all research participants, and gender is one factor that affects students' overall perceptions and even their motivations for playing games (Hainey et al. 2013).

Gamification, *gamefulness*, and *game-based learning* are overlapping concepts that are often used interchangeably. The term *gamification* was invented by the digital media industry, but what it means is "using game design elements in non-game contexts" (Deterding et al. 2011, 9). Gamification can be applied to learning languages in several ways because gamified learning does not only refer to using digital learning games, as Deterding et al. (2011, 11) point out: "Although the overwhelming majority of current examples of 'gamification' are digital, the term should not be limited to digital technology". Kapp (2012, 10) clearly agrees with this view in his definition of the term: "Gamification is using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems." Engaging people, at school or at

work, is one of the main goals of gamification according to Kapp (2012) as well as Vesterinen and

Mylläri (2014) because it promotes learning and the completion of tasks very effectively. Kapp

(2012, 12) writes about the role of gamification in instruction as follows:

> Gamification can be used to promote learning because many of the elements of gamification are based on educational psychology and are techniques that designers of instruction, teachers, and professors have been using for years. Items such as assigning points to activities, presenting corrective feedback, and encouraging collaboration on projects have been the staples of many educational practitioners.

To put it simply, gamification is making tasks that are not inherently games appear more game-like,

and the idea of making use of games or game-like features in teaching is nothing new.

Gamification is supposed to lead to *gamefulness* and this term fits the school context particularly

well, because it does not imply using information and communication technology as strongly as the

concept of *gamification*, since it may simply refer to increasing immersive and experiential learning

(Vesterinen & Mylläri 2014, 57). According to Vesterinen and Mylläri (ibid.), the everyday activities

in schools and the educational system in themselves are good examples of gamefulness because

of the elements of games that are inherently part of them. So then, what are these elements of

games that seem to promote learning? According to Kapp (2012, 13–18), they are interactivity,

storytelling, problem solving, competition, conflicts and challenges, collaboration, feedback, and

rewards. Kapp (2012, 33–35) emphasizes the frequency and intensity of feedback and that

badges, points, and rewards are not the only component to gamification because the best games

combine various elements creatively.

Although gamification in the educational setting is not a new phenomenon, the use of digital

games to support learning is a recent development, and thus, a great amount of research has

lately emerged on this topic including meta-analyses. An outstanding number of studies concerning

games and EFL vocabulary learning seem to have been conducted in Asia (e.g., Alshaiji 2015;

Chen, Chen & Dai 2018; Inal & Cagiltay 2007; Yen, Chen & Huang 2016; Zhonggen 2018). Based

on the research, the use of educational games in schools should be encouraged because for some

pupils games are a motivating way to learn, they offer a learning environment that is familiar to

young people, the use of games is often rewarding and adds variety to a class, and in addition,

there are loads of free educational games (Harviainen, Meriläinen, & Tossavainen 2013, 69). Also,

Vesterinen and Mylläri (2014, 57) write that, besides that games make it possible to take learning outside the classroom, it is a question of the way children and adolescents learn, i.e. a learning environment they are familiar with.

As playing educational games is not tied to physical classrooms, and basically, they can be played wherever and whenever without an intentional goal of learning, games are learning environments that cross the line between formal and informal learning (Krokfors et al. 2014, 67). This means that the teacher is not always present and guiding the learning process that occurs during a game play because learners can play educational games during their free time. However, there are differing opinions about whether educational games are ever so captivating that they would really be played without any intentional learning goals. For example, Jonassen, Howland, Marra, and Crismond (2008, 54–55) state that not all computer games represent efficient modern game design but are rather based on competition over some uninteresting task which does not necessarily even require anything else but memorizing. Also Kapp (2012, 14) mentions that "it is not easy to create a game that is both fun to play and instructional".

Although the teacher cannot always be there to instruct the learner when s/he is playing a game, the instruction given by the teacher has a significant role when games are played during class time and taken as a part of the learning environment. Based on their literature review, Krokfors et al. (2014) were able to conclude that an active role of the teacher before, during, and after gameplay is very important in integrating educational games and gamified environments into teaching, and thus, it cannot be assumed that learning happens automatically as a result of such games. Harviainen et al. (2013, 75) concur with these findings in saying that gamified learning should not lead to boxing in learning in a way that the teacher becomes an outside observer, and they underline that teachers' contribution is crucial when a gamified learning experience is planned and the narrative is created and divided into stages. A careful consideration of the narrative concerns especially role-playing games. Harviainen et al. (ibid.) use the term *game leader* when referring to the teacher, which describes the teacher's role in the gamified learning process very aptly in most cases. According to Vesterinen and Mylläri (2014, 56), the use of edutainment should be pedagogically meaningful, and to do this and support the learning of a given subject a great

amount of planning is needed. Pihkala-Posti (2015) also talks about the meaningful integration of games into teaching and emphasizes careful planning and goal setting especially with informal games, meaning games that were not originally designed for learning purposes, but in addition she draws attention to the fact that the teacher's task is somewhat lighter when educational games are used because the learning objectives have already been taken into account in the design phase. Vesterinen and Mylläri (2014, 57), as well as Pihkala-Posti (2015), encourage practitioners to consider games as a part of pedagogical entities and other learning environment even more than has been done so far. This study aimed to do exactly this when the decision was made to use *Vocabulary.com* as a supplement to regular teaching material and learning environment during one whole course, but the platform was also chosen because its use does not require enormous efforts from the teacher and could, thus, be more readily adopted by busy teachers.

Rather than being just an online vocabulary learning game, *Vocabulary.com* is referred to as an online language learning platform or a game-based language learning environment. This is because it is more than just a game: it is a monolingual English language learner's dictionary, and an online tool which helps students to keep track of their own English vocabulary development and teachers to create vocabulary-related assignments and track their students' progress in real time if they have a subscription to the Educator Edition. On the website (Vocabulary.com) it is promised that "Vocabulary.com is a platform for lifelong learning, growing with you every step of the way. As you improve, the words that you learn will become more and more advanced. And, with our easy-to-use progress-monitoring tools, you can always look back to see how far you've come". Hence, this thesis is not only about a simple educational game, but rather about a complex vocabulary learning platform that makes use of adaptive technology.

The term *platform* usually refers to the fully functional website, as opposed to mobile applications which offer a quick and easy access to these sites, but often lack some of the features of the platform (Social intelligence). Language learning platforms are online portals (websites) where anyone can learn a language at their own pace, and they can be accessed anytime without having to install any software. They usually have different kinds of media content, such as video, audio, and text, but they do not necessarily have any games. One of the most popular online

language learning platforms worldwide is called *Duolingo*, which is a game-based platform like *Vocabulary.com*, but there are also dozens of other more or less similar platforms offering language courses. The term *online learning environment* is more general, and "refers to the e-learning environment used for knowledge acquisition within computer mediated digital systems" (IGI Global). In the case of *Vocabulary.com*, this means that vocabulary learning occurs in a virtual setting rather than a physical classroom, although the game would be played, or the dictionary accessed during an ordinary English class at the school.

2.2. Motivation, engagement and flow

Besides educational games and gamification, *motivation*, *engagement*, and *flow* are important concepts when game-based learning is discussed. These terms will be examined and defined in the following subsections.

2.2.1 Motivation

It is well-known that motivation plays a central role in initiating the learning process and completing tasks that promote competence. Kapp (2012, 12) defines motivation in the following way: "Motivation is a process that energizes and gives direction, purpose or meaning to behavior and actions." Schunk et al. (2008, 4) also give a concise definition of motivation: "**Motivation** *is the process whereby goal-directed activity is instigated and sustained.*". Hence, motivation is dynamic, involves goals, and requires sustained activity (Schunk et al. 2008, 4–5). The dynamic nature of motivation is due to the established fact that "motivation bears a reciprocal relation to learning and performance; that is, motivation influences learning and performance and what students do and learn influences their motivation" (ibid.). In addition to what students do and learn, their beliefs have a crucial impact on their motivation and learning. Schunk et al. (2008) as well as Kapp (2012), and especially Dweck and Molden (2017), talk about the importance of the learners' attitudes, or mindsets, and their belief in that they possess the intellectual capabilities they need to learn certain material. Thus, motivation is strongly linked to self-confidence. Kapp (2012, 54) writes, that learners' confidence and belief in their capabilities can be strengthened by "clearly

stat[ing] the learning requirements and expectations in the beginning", and by "creat[ing] small opportunities for success so the learner can work his or her way through the instruction by completing small milestones" because success breeds success.

Among others Zoltán Dörnyei, who is known for his work on motivation in second-language acquisition (SLA), also called for more goal setting in the L2 classrooms much earlier (Dörnyei 1994, 276). Dörnyei (1994, 277) was also one of the first researchers to show that self-confidence is "a major motivational subsystem in foreign language learning situations". Besides self-confidence, he (ibid.) discusses other learner-related components of L2 motivation as well, such as language use anxiety and self-efficacy (perceived L2 competence), which are linked to self-confidence, and the need for achievement. In addition to these more general elements, he (ibid.) identifies motivational components that are specific to learning situations, which he divides into three categories, namely course-specific, teacher-specific, and group-specific motivational components. Based on the different components of foreign language learning motivation, Dörnyei (1994, 281–282) also provides a very useful and practical list of ways to motivate L2 learners that is still relevant. The importance of motivating students should never be underestimated because, as Dörnyei (2005, 65) has pointed out more recently, "although language aptitude accounts for a considerable proportion of individual variability in language learning achievement, motivational factors can override the aptitude effect", and thus, individual abilities, appropriate curricula, or even excellent teaching cannot substitute for motivation.

When motivation is discussed, it is very typical to make a distinction between intrinsic and extrinsic motivation. An intrinsically motivated learner engages in an activity for its own sake because of intrinsic reasons, such as inner satisfaction and a sense of meaningfulness, whereas for an externally motivated learner engaging in an activity is a means to an end, and thus, this kind of motivation is dependent on external rewards (Schunk et al. 2008, 268). According to Schunk et al. (ibid.), "[t]here is evidence that intrinsic motivation can promote learning and achievement better than can extrinsic motivation". While dogs can be motivated and trained with the help of treats, people tend to find intrinsic rewards more desirable because they are usually longer-lasting than external rewards. According to Deci and Ryan (1985, 245), "[i]ntrinsic motivation is in evidence

whenever students' natural curiosity and interest energize their learning", and they continue that "[w]hen the educational environment provides optimal challenges, rich sources of stimulation, and a context of autonomy, this motivational wellspring of learning is likely to flourish". Thus, curiosity is an important element of intrinsic motivation, and teachers can do many things to awaken this natural characteristic of their students. However, a learner is rarely only intrinsically or only extrinsically motivated, although it is normal that some motives are more predominant over others. Thus, Deci and Ryan (1985) introduced the self-determination theory, which emphasizes the role of the psychological needs of competence, relatedness, and autonomy behind intrinsically motivated behaviour, and Dörnyei (1994, 276) writes that "[i]n the light of this theory, extrinsic motivation is no longer regarded as an antagonistic counterpart of intrinsic motivation". Building on this legacy, Schunk et al. (2008, 237) underline that although it would be "tempting to think of intrinsic and extrinsic motivation as two ends of a continuum … It is more accurate to think of intrinsic and extrinsic motivation as separate continuums, each ranging from high to low". Hence, it is possible that a learner has a very high intrinsic and a very high extrinsic motivation at the same time, and so on. A learner's intrinsic motivation concerning an activity can also change over time and vary from one situation to another because of its dynamic nature (Schunk et al. 2008, 268).

Gamification aims exactly at increasing learners' intrinsic motivation. According to Kapp (2012, 12), motivating action lies at the heart of gamification. He (ibid.) states, however, that "[f]or individuals to be motivated, the challenge must not be too hard or too simple", or as Deci and Ryan put it (cf. above), the challenges must be optimal. In other words, referring to the studies of Vygotsky, the tasks in a game should be within the learner's *zone of proximal development*, and the most motivational games provide *scaffolding*, meaning "supports [which] help students perform at a level that would be unattainable without the assistance" (Kapp 2012, 66; Schunk et al 2008, 329). In addition to many other motivational models, Kapp (2012, 55) summarises the work of Malone, who studied games and what makes them fun and motivational as early as in 1980s. Malone created a model which is based on intrinsic motivation and which includes three motivational elements typical for games: challenge, fantasy, and curiosity (ibid.). The challenges in a game should not only be at the right level but also meaningful for the learner, and the learning

environment should build learners' self-confidence (ibid.). Fantasy calls attention to the imaginary world of the games, and a third just as important feature in intrinsically motivating environments is that they evoke and cultivate the learners' curiosity, which was already discussed above (Kapp 2012, 56–57). Competition can be seen as a form of challenge, and while playful competition is often found in educational games, Vesterinen and Mylläri (2014, 60) write that competition as a framework for learning is perhaps inconsistent, but playfulness, role-play, and virtual interaction certainly have a positive impact on motivation. Finally, gamification has the potential to increase student autonomy, and along the same lines with Deci and Ryan (1985, cf. above), Shadiev et al. (2018, 896) write that "[l]earners who have greater control over the learning content, purpose and process have more intrinsic motivation". To put it briefly, gamification has many advantages that positively affect students' motivation to learn and complete tasks given by the teacher.

2.2.2 Engagement

Discussions about gamification usually revolve around *engagement* as its main purpose is engaging students or employees more fully to their work, because engaged people do their work more effectively, usually like what they do, and do not give up easily. According to Schuell (1986, 429), "[t]he teacher's fundamental task is to get students to engage in learning activities that are likely to result in achieving [the desired learning] outcomes". Thus, student engagement in learning activities is a common concern for teachers as it is a prerequisite of successful learning, and the activities must be meaningful in order to be engaging. Schunk et al. (2008, 370) state that "[s]tudents are more likely to be engaged in tasks that take advantage of their backgrounds, interests, and experiences." Digital games and gamification in general take advantage of children and adolescents' background, interests, and experiences, and therefore using such learning environments has the potential to increase engagement. The concept of *immersion*, which is very important in the context of games, is closely related if not synonymous with the term *engagement*, and both these terms are associated with *flow*, that will be discussed next.

2.2.3 Flow

Immersion is engagement taken a step further, and immersive experiences have many common features with flow experiences (Pace 2008, 419 & 423). According to Kiili (2004, 14), "[g]ames … are most successful and engaging when they facilitate the flow experience", and thus, video game players are very familiar with flow experiences, although the phenomenon is not limited to games. Pace (2008, 420) defines *flow* as follows: "Flow is an enjoyable state of intense mental focus that is sometimes experienced by individuals who are engaged in a challenging activity". Kapp (2012, 71) adds that "[flow] is that ideal state between boredom and anxiety or frustration". The psychological term *flow* was introduced by Mihaly Csikszenmihalyi who studied people involved in various activities in different countries. As he discusses flow, he uses the phrase 'optimal experience' and distinguishes between pleasure and enjoyment, the latter being typical of flow experiences. Csikszenmihalyi (1991, 48) found out that the type of activity that was done was not key in getting into the state of flow, and "regardless of culture, stage of modernization, social class, age, or gender, the respondents described enjoyment in very much the same way". Thus, it is a question of a universal experience, and the elements, or conditions, of flow experiences are very much the same everywhere.

According to Csikszenmihalyi (1991, 49) the eight major components of these experiences are the following: 1) a challenging task that is achievable, 2) concentration on the task, 3) clear goals, 4) immediate feedback, 5) effortless involvement that makes disappear daily worries or frustrations, 6) sense of control, 7) disappearance of concern for the self, and 8) loss of sense of time. For example, a video game player or a person reading a captivating story can be in a state of flow so immersed in the game or the book that s/he forgets to eat or drink or do their homework, and hours seem to pass by in minutes. Although Csikszenmihalyi speaks up for finding enjoyment in work and daily chores, he (1991, 59) also writes that "[e]njoyment often occurs in games, sports, and other leisure activities that are distinct from ordinary life, where any number of bad things can happen. . . . the flow experience is typically described as involving a sense of control—or more precisely, as lacking the sense of worry about losing control that is typical in many situations of normal life". Using a foreign language in real life situations is often very stressful for learners

because there are so many factors that the speaker cannot control, such as the topics that come up in a discussion, whether the co-speaker understands the learner's accent or pronunciation, the speed of a group conversation, etc. Therefore, games that allow the learner to practise using the language in a safe environment, without a sense of worry about losing control, relieve stress and anxiety and make the student more receptive and quicker to learn. On the other hand, the game should not make the learner bored either, so it is a matter of utmost importance that there is a balance between the challenging activity and the individual's skills and abilities. Concerning this balance, Kiili (2004, 16) writes that "[i]t is important that the challenge that a player faces in the game world is closely matched to the skill level of the player. . . . In order to keep a player in a flow state game designers should ensure that while a player's skill level increases the challenges also should become more difficult". Unfortunately, according to Kapp (2012, 73), this is often not the case in educational games. Perhaps due to this fact, and the empirical evidence that flow experiences have such a positive impact on intrinsic motivation and learning, both Kapp (ibid.) and Kiili (2005, 14) underline that serious games should be designed in a way that they make entering a state of flow possible.

2.3. Technology Acceptance Model

As this thesis studies the reception of the language learning platform *Vocabulary.com* among Finnish upper secondary school students and their attitudes towards this digital learning tool, the analysis of results will be based on a theoretical model called Technology Acceptance Model (TAM). Among the theories that have been developed to understand the acceptance of information technologies, TAM is one of the most commonly used ones (King & He 2006), and it has also been widely used in the research on new learning technologies (e.g., see Al-Emran, Mezhuyev, & Kamaludin 2018). TAM was first introduced in 1986 in a doctoral dissertation by Davis and further studied by him and his colleagues to prove its validity (Davis, Bagozzi, and Warshaw 1989). The two key variables in TAM are perceived usefulness and perceived ease of use, and according to Davis et al. (1989, 985), these two beliefs are "of primary relevance for computer acceptance behaviors". The following quote explains what Davis (ibid.) means by these two concepts:

"Perceived usefulness (U) is defined as the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organisational context. Perceived ease of use (EOU) refers to the degree to which the prospective user expects the target system to be free of effort". Transferred to the educational setting, this means that in order for students to perceive a system useful, they need to believe it has a positive impact on their academic performance. The model is based on the assumption that perceived usefulness, which in turn is affected by perceived ease of use, influences both the user's attitude toward using computer system as well as his/her behavioural intention to use the systems (ibid.). However, while not denying the importance of ease of use, Davis et al (1989, 1000) conclude their study by stating that the usefulness of a system is the most essential factor in predicting the acceptance of a system because "[u]sers may be willing to tolerate a difficult interface in order to access functionality that is very important, while no amount of ease of use will be able to compensate for a system that doesn't do a useful task". In other words, a brilliant interface does not save a bad application, so the crucial question is whether or not *Vocabulary.com* is perceived useful by upper secondary school students.

3. LITERATURE REVIEW

In this section, a more in-depth look at language and especially vocabulary learning will be taken. Some relevant research on digital game-based language and vocabulary learning and on electronic language dictionaries will be presented.

3.1. Vocabulary learning and acquisition

A great number of words are needed to speak a language fluently, and thus, learners often feel overwhelmed by this task. According to Nation (2001, 16), English language has around 2,000 high-frequency words that "are so important that anything that teachers and learners can do to make sure they are learned is worth doing". However, while 2,000 words makes a good foundation, Nation (2001, 20) estimates that a vocabulary of 15,000 to 20,000 words is needed to read texts in

a way that the unknown words do not really disturb the reading. Chacón Beltrán, Abello-Contesse, and Torreblanca-López (2010, 27) state that "[w]hile grammar is a closed system with a limited set of rules, vocabulary is open-ended, with even older native speakers learning new words. As such, it is likely to be the biggest hurdle in learning a language". This means that vocabulary should have a central role in teaching a new language, and learners need to be equipped by vocabulary learning strategies that they can use throughout their lives. Chacón Beltrán et al. (2010, 29) also draw attention to the widely known fact that "people cannot learn a word from a single meeting; rather learners need multiple contacts with words to acquire them". To learn a new word, as many as 16 exposures may be needed, and learners should, thus, be provided with realistic expectations about their capacity to permanently acquire a new word as well as encouraged to review the learned vocabulary items and expose themselves to various kinds of texts (Chacón Beltrán et al. 2010, 29). As all learning, acquiring a word is a process rather than a one-time event because "all word knowledge ranges on a continuum, rather than being known versus unknown" (Chacón Beltrán et al. 2010, 32).

In the traditional language learning textbooks, new vocabulary is typically presented in the form of a wordlist with vocabulary items and one or two translated meanings of each word, and then practised upon with the help of various exercises. Including exercises that provide enough context is crucial because, as Cook (2008, 51) points out, "[a]cquiring a word is not just linking a form with a translated meaning . . . It is acquiring a complex range of information about its spoken and written form, the ways it is used in grammatical structures and word combinations, and diverse aspects of meaning." Having learned the meaning of a foreign language word in one's native language is only the beginning because in different languages the translation equivalents may be used differently in context (sentences). Thus, Cook (ibid.) underlines that "[e]ffective acquisition of vocabulary can never be just the learning of individual words and their meanings in isolation." The important word here is *just*, because it is also recognised that translation learning is quicker and easier and preferred by many learners, although it does not guarantee a successful use of these words in context—especially on the part of weaker learners (Prince 1996, 488). Chacón Beltrán et al. (2010, 27–28) talk about learning a form-meaning link, which they call "the minimal specification

for knowing a word", and thus, it should be encouraged, but they agree with Cook (2008) in that learning should not stop there. Chacón Beltrán et al. (2010, 28) write that "[i]t may be possible to use a word with this level of knowledge in a basic way, but it is unlikely that the word can be used appropriately, confidently and idiomatically in a range of different contexts". This is related to the receptive/productive distinction in language learning of which Nation (2001, 24–25) writes more about, since translation learning or learning a form-meaning link might actually be enough for using words passively (in reading and listening), but learners need to know more about words and their usage to actively produce language (in speaking and writing).

According to Cook (2008, 56) basic-level vocabulary items should always be taught first because "[t]he human mind automatically starts from this concrete level rather than from a more abstract level or a more specific one". Usually, the younger the learners are, the more concrete terms they are taught, but following the advice of Cook, this is useful for all learners no matter their age. However, many concrete words taught to elementary age children are not part of the 2,000 most frequent words, so the teachers and learners are faced with a challenge of deciding which types of concrete words to put more emphasis on. Cook (2008, 60–62) then goes on to explain some of the strategies that learners use to acquire new words: repetition and rote learning, organising words in the mind, and linking to existing knowledge. While the commonest approach to learning words might be repetition and learning them by heart, it may not be the most effective way, because it seems that learners will more likely remember new vocabulary if they are able to link new information to old (ibid.). This type of learning can be supported by constructivist teaching, which is based on the belief that learning is an active, constructive process.

In addition to the different strategies of learning the meaning of a new word, there are also different ways to teach those meanings. In the audio-visual teaching strategy, the meaning of a word is demonstrated by means of a picture whereas in the traditional language teaching a translation is provided (Cook 2008, 63). By contrast, the communicative language teaching strategy relies on the assumption that the meaning of a particular word is "built up out of hearing it in different interactional contexts over time" (ibid.). Cook (ibid.) writes that what is common to all of these strategies, is that they aim at providing students with a single meaning for each word. While

this might be true of certain basic-level terms, such as the English word *man*, I would say that the communicative language teaching strategy can result in learning several meanings for words and about their usage, as in different contexts words have different meanings and also behave differently. Nevertheless, as "L2 learning is not just learning a word once and for all, but learning the range of information that goes with it", second and foreign language learners should be taught to use the words intentionally as well, and not just assume that they will acquire all the necessary information by hearing or reading the word in different contexts, for example by teaching lexical relationships and putting words in their structural context (Cook 2008, 63–64). Nation (2001, 16) summarises the different ways of learning and teaching vocabulary by sorting them into four categories and giving practical examples: 1) direct teaching, e.g., teacher explanation and peer teaching, 2) direct learning, e.g., study from word cards or dictionary use, 3) incidental learning, e.g., guessing from context in extensive reading and use in communication activities, and 4) planned encounters, e.g., graded reading (reading texts with a strictly limited vocabulary) and vocabulary exercises. Hence, to conclude, both explicit teaching (or learning about a word in isolation) and "numerous exposures with the word in diverse contexts" are necessary for a learner to master a word (Chacón Beltrán et al. 2010, 28). This view is supported basically by all second and foreign language learning researchers.

3.2. Digital game-based language learning

Kapp (2012, 101–103) summarises the findings of several meta-analysis studies on digital games and provides an exhaustive list of the ways and the conditions in which instructional games are beneficial for learning. It is beyond the scope of this thesis to present the whole list, so only a few points that have not been discussed already above will be taken up here. As the first point, Kapp (2012, 101) underlines that targeting specific learning content and defining the objectives precisely for the learners lead to the most beneficial effects when educational games are used as learning environments. In addition, if learners are provided with unlimited access to the educational games, they will very likely benefit from them more (Kapp 2012, 102). The importance of planning the gaming experience was already mentioned, but the teacher's instructional support is also important

during the game, so that the learners understand how the game works (ibid.). Kapp (ibid.) writes

that in comparison with traditional teaching methods, the studies showed that "[g]ames and

simulations yielded better attitudes toward learning", and simulation games do not even need to be

entertaining to have a positive impact on learning. When the conditions are right, educational

games, for example, foster higher-order thinking. Other elements that help to improve learning in

gaming experiences are rewards and the use of avatars because "watching an avatar that looks

like you performing an activity influences you to perform a similar or same activity in future" (ibid.).

Although the use of external rewards may have a negative effect on intrinsic motivation, Kapp

(ibid.) says that "[a] reward that seems to be extrinsic only, such as points, can have intrinsic value

if it provides feedback to the player/learner" (ibid.). Thus, the relationship between motivation and

game elements is rather complex.

More recent perspectives on digital game-based learning are provided by a meta-analysis

study conducted by Hung et al. (2018) which focuses on language learning. Hung et al. (2018, 90)

state that

> Over the past few decades, digital games have been employed as a form of new media
> with enormous potential for learning in a broad range of subject areas . . . Among
> these, language learning is considered a more promising discipline than many others
> (Young et al., 2012), largely because of the assumed benefits based on various
> language acquisition theories, such as immersive exposure to the language learning
> environment, lowered anxiety and other affective barriers to language learning, and
> increased use of the target language for interaction in gaming.

As demonstrated above, educational games have a positive effect on learning in general, and the

link seems to be even stronger when language learning is considered. Hung et al. (ibid.) write that

the results of previous literature reviews in the field of game-based learning show that playing

educational games has most impact on affective learning outcomes and knowledge acquisition,

and also in the domain of digital game-based language learning (DGBLL) the results of earlier

meta-analyses are promising but "call for more research and development beyond drill and

practice games". As this thesis focuses on student attitudes and motivation, it deals with affective

learning outcomes rather than knowledge or language acquisition, although students' views on

their vocabulary development are included as well. The studies reviewed by Hung et al. (2018, 99)

reported a variety of affective outcomes, "with most studies suggesting students' positive attitudes

toward the use of digital games for language learning (e.g., Chen & Yang, 2013), and the fun factor was one commonly cited reason for this across such works". The emphasis on the element of fun seems to be very common in the literature, as it is closely related to the Flow Theory, which also stresses the fun experience.

In Hung et al. (2018), language learners' increased self-efficacy, learner autonomy, and willingness to communicate in the target language were also reported. While generally "DGBLL environments were well perceived and enjoyable for the students", the games did not always have a positive impact on learning, especially if they caused a cognitive overload (Hung et al. 2018, 100). According to a study by Sandberg, Maris, and Hoogendoorn (2014, 129), also reviewed by Hung et al. (2018, 100) who summarise the results possibly too optimistically, an added gaming context seems to improve the vocabulary learning outcomes of children, but since the game used in their study did not motivate children to spend more time on the learning material compared to the control group, there are likely other factors than the gaming context that have contributed to these results. In addition, the positive impact of games on learning is related to gender. On one hand, a couple of studies reviewed by Hung et al (2018, 100), that were conducted in Sweden, showed that boys played digital games more frequently out of school than girls, and this was reflected in their improved English skills. On the other hand, in a study by Inal and Cagiltay (2007, 460), who studied the flow experiences of 7- to 9-year-old children in an interactive social game environment, "[i]t was observed that girls had more tendency than boys towards playing educational games". There were other gender-related differences as well:

> While ludology had more effect than the narratology of computer games on the flow experiences of boys, narratology had more effect among girls. . . . Girls like stories more than do boys, while boys like the complexity of games and dealing with game environments. It is seen that girls and boys expect different components or characteristics from computer games. (Inal & Cagiltay 2007, 463)

Hence, while games impacted the learning outcomes positively regardless of the gender, the gender of players affected their game preferences. Although girls did not like playing computer games including competition and complex environments as much as boys, most of the children liked to play games in groups, and the researchers found out that competition between the groups

facilitated their flow experiences—and not just of those children who played but also of those who were watching others play (Inal & Cagiltay 2007, 460 & 463).

In DGBLL research, digital games are most often used to enhance vocabulary learning, but their impact on other areas of language acquisition is less studied, and no quality studies seem to have been made on improving L2 learners' reading skills through digital games at all (Hung et al. 2018, 100). However, improving L1 learners' reading skills through digital games has been studied, for example by Ronimus, Kujala, Tolvanen, and Lyytinen (2014) in Finland. According to Hung et al. (2018, 101), of those areas that have been studied in the context of L2 learning, "the so-called 21st century skills were studied least often in the DGBLL literature". However, they (ibid.) state that "despite the limited number of studies, there is some evidence showing the potential of digital games to enhance complex competences, such as collaboration and communication skills". The lack of studies in this area might be due to the fact that collaboration as such is not seen as a linguistic skill, although it certainly has a significant role in successful communication, and thus, educational games developed for language learning may not encourage as much collaboration as some other games do.

Another recent meta-analysis study on digital game-based second language learning, that focuses on vocabulary learning and conditions of research designs, was conducted by Tsai and Tsai (2018). Tsai and Tsai (2018, 353) conclude that "[i]n comparison with the results of previous meta-analysis studies in the field, this study again supports that DGBL is superior to traditional instruction on L2 vocabulary achievements by a large effect size". According to Tsai and Tsai (2018, 351–352), the game type, the learners' educational level, and their L2 proficiency had a significant influence on the L2 vocabulary learning outcomes in the research conditions where video games were juxtaposed with traditional instruction. Considering the game type, the task-based games, meaning games that involve problem-solving, simulations, and decision-making, were clearly more effective than drill-and-practise types of games (Tsai & Tsai 2018, 349 & 352). Tsai and Tsai (2018, 354) write that "[t]his implies that while drill-practice games might meet the learning purpose, they might also be seen as less *gameful* for encouraging engagement". Thus, task-based games will more likely generate flow experiences which was highlighted as an

important objective of educational games. In the case of educational level, digital games worked better for university students as well as for preschool and elementary students than for lower or upper secondary school students. However, there were only a couple of reviewed articles studying secondary school pupils, and also in the studies reviewed by Hung et al. (2018, 102), "[u]niversity students were the most frequently selected samples". In addition, Tsai and Tsai (2018, 354) mention other factors that might have affected these results, so the findings concerning the educational level are questionable. On the language proficiency levels, Tsai and Tsai (2018, 352) found out that "digital games had the potential to produce a large effect size in L2 vocabulary learning when the students held a certain degree of L2 vocabulary knowledge (beyond-beginning learners)". This suggests that playing digital vocabulary learning games would be useful for secondary school students, at least in Finland where children start learning English at a young age in elementary school and are not beginners by the time they start attending secondary school. However, Tsai and Tsai (2018, 354) say that according to their findings, "the best scenario for digital game-based L2 vocabulary learning might be when university students, with beyond-beginning L2 proficiency, play task-oriented digital games".

Chen, Tseng, and Hsiao (2018, 74), who conducted a moderator analysis of 10 empirical studies, found out that learners' age or linguistic background did not influence the effects of DGBL on vocabulary learning unlike game design, which seems to have a crucial impact. This study further questions whether educational level (the learners' age) really plays such an important role in DGBLL as the results of Tsai and Tsai (2018) imply. In Chen et al. (2018), the linguistic background does not refer to the learners' L2 proficiency level but to their native language, so their findings are mostly consistent with Tsai and Tsai (2018). Chen et al. (2018, 73) state that "the results of the study suggest that adventure-based games, with their larger effect size, can be more stimulating, interesting and motivating than non-adventure-based games because they require higher mind functioning such as critical thinking, problem solving and task engagement". By non-adventure-based games, Chen et al. refer to drill-and-practise games, and according to them (2018, 74), adventure-based (or task-based) games do not necessarily need to have a narrative, but educational games must include the element of fun to contribute to vocabulary learning.

However, it should be remembered, that there are very likely gender-related differences in what is perceived as fun by learners, and this was not discussed at all in Chen et al.'s study, and they do not explain what they mean by adventure-based games that do not have a narrative either.

In sum, the findings analysed in several meta-analysis studies are mostly in favour of digital game-based language learning over traditional second or foreign language teaching. However, the game design has a crucial role on the intensity of the impact that a game makes on learning, task-based or adventure games resulting in better outcomes, and girls and boys have different preferences concerning the game type.

3.3. Electronic dictionaries

According to Atkins and Rundell (2008, 407) "[the dictionary definitions'] practical purpose is to resolve the communicative needs of dictionary users". People consult dictionaries for different reasons, which can be characterized in terms of "decoding" and "encoding" (ibid.). *Decoding* means that people look up words in dictionaries because they simply need to know what an unfamiliar word means in a certain context, such as a novel they are reading, whereas *encoding* means that they look up the definition because they want to produce language, either spoken or written, "and this involves encoding the meaning that is in [their] head, in a way that is natural, appropriate, and effective" (ibid.). Hence, decoding and encoding, respectively, are related to the receptive/productive distinction of vocabulary learning discussed above. Encoding often requires a long and detailed description of the word while a fairly short definition usually works best for decoding. Thus, it is not an easy task to build a dictionary entry in such a way that both needs are met. Atkins and Rundell (2008, 410) point out that "[t]he problem is especially acute in dictionaries for language-learners, whose users need a great deal of support if they are going to produce accurate and natural-sounding text", but immediately after this comment they add that "[t]here are exciting opportunities here in the electronic medium; one can envisage different styles of entry geared to different user functions". The opportunities of the electronic medium have been very effectively exploited in the dictionary of *Vocabulary.com*, which is not just another paper dictionary in electronic form.

In this thesis, following the definition of Levy and Steel (2015, 178), electronic dictionary refers to "a dictionary that is available online via a browser on a desktop, laptop, tablet or mobile platform". Levy and Steel (ibid.) describe the many advantages that electronic dictionaries have over paper dictionaries, such as high search speeds, flexibility, and the absence of space limitations of printed dictionaries, but they also mention the status of paper dictionaries. Regardless of their earlier status, nowadays electronic dictionaries have largely replaced the printed copies that belong to the history. Levy and Steel (ibid.) also write that "there have been numerous developments in dictionary design during the last three decades and our traditional understanding of what a 'dictionary' might be requires reappraisal". This is an important observation considering the diversity of online dictionary tools available for the learners of today, and these recent developments are clearly reflected in the survey results of Levy and Steel (2015). In their survey, *WordReference.com* and *nciku.com* were the two most frequently mentioned online dictionaries, but the dictionary-type or dictionary-related technologies used by the language students who took the survey ranged from online dictionaries and web-based translators to wikis and blogs (Levy and Steel 2015, 181 & 185). In addition to online dictionaries and translators, YouTube, social networking sites, mobile phone applications, conjugation websites and online language games were among the most widely used technologies (more than 50 % of the students used them). This suggests "a fluidity around what the name 'dictionary' actually entails" (Levy and Steel 2015, 186). Hence, it seems purely logical that an online dictionary and an online language learning game have been combined on *Vocabulary.com*.

4. DATA AND METHODS

The subjects of this study were first-year upper secondary school students that I taught during my teacher training year, and they had studied English for about 7 years at that point, so their English skills were already at a good level. In their review article, Hung et al. (2018, 98) say that "[o]ne important aspect that seemed to be overlooked by many of the reviewed studies is the role of language proficiency in constraining or facilitating the DGBLL experiences of students", and thus, they advise DGBLL researchers to "be more explicit about their participants' language abilities and

how they were measured", so that research findings could be more easily applied. According to the Common European Framework of Reference for Languages (CEFR), the students could all be classified as independent language users, their level ranging from B1 to B2. Basically, 28 students participated in the study (testing *Vocabulary.com*), but altogether 50 students answered the first questionnaire because of a chance offered by another teacher to conduct a survey with a group of second-year upper secondary school students (ENA6, their sixth obligatory course in upper secondary school) to get a wider perspective on the matter. Each student's level of language proficiency was at least intermediate (more likely B2 than B1) in the last mentioned group as well. The answers of first- and second year upper secondary school students will be compared and contrasted in the analysis of results. As mentioned above, secondary school students are the least researched group in DGBLL literature, and besides Finnish EFL students have not been researched in this field, and hence, this thesis is a useful addition to the existing literature, even though vocabulary learning has been the most popular topic in the research discussing and evaluating the usefulness of digital games in language learning. Another strength of this study is that the intervention duration was quite long.

The course I taught was the students' second English course in the upper secondary school (ENA2), and the course lasted for 8 weeks. Besides the normal content of the course, *Vocabulary.com* website was introduced to them right at the beginning of the course and the students joined the class which I had created on the Educator Edition of *Vocabulary.com*. In addition, during the first meeting, the students answered a questionnaire that addressed their use of digital games and their attitudes towards them as well the impact of vocabulary learning games on their motivation. There were also a few questions related to English-language dictionaries. During the course we had three vocabulary tests, and one option for preparing for the test was always to use *Vocabulary.com*: revising at home with the help of word lists made by the teacher and playing the games offered on the website based on these lists. The students also had a chance to play the games in the classroom, for example before the first word test we played Vocabulary Jam, where students play a quiz created by the teacher (from the readily available content on *Vocabulary.com*) in randomly assigned teams using their own laptops or mobile phones.

During the lessons that I taught, I made observations, and wrote down what I heard the students say about the game or the dictionary directly to me or to other students as well as notes about their usage of the website in the classroom. In addition, I kept track of the students' use of *Vocabulary.com* through Educator Edition. At the end of the course, another survey was conducted to find out about the students' thoughts concerning *Vocabulary.com* and their subjective views on its impact on their motivation and learning outcomes.

Both questionnaires consisted of 12 five-point Likert items and either 2 or 3 open-ended questions. The response alternatives for Likert items were the following: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. An odd number of response alternatives was chosen because otherwise the possibility of measuring neutral opinions which do exist in the population would have been excluded by the questionnaire design, even though it is recognised that an "obvious problem that arises if a middle response alternative is provided is that it is possible for respondents who are fatigued, or poorly motivated to complete the survey to select the middle alternative when they could, if pushed, give a directional response" (Sturgis, Roberts, & Smith 2014, 17). The midpoint alternative, as it is formulated in this study, can also be interpreted in at least two different ways, as neutral opinion or no opinion (as a way of saying "I don't know"), and Sturgis et al. (2014, 20) argue that more often it denotes no opinion than neutrality of opinion. Hence, these issues related to the "neither/nor" formulation of the midpoint alternative of the rating scale will be considered in the analysis of results. In Questionnaire 1, the statements were grouped thematically, and the two questionnaires shared one Likert item that concerned the students' use of monolingual dictionaries because I wanted to find out if the use of such dictionaries during the course had affected their preferences. The last open-ended question in Questionnaire 2 asked for the respondents' own ideas about what a good vocabulary learning game would be like. As previous studies suggested that boys play digital games more frequently than girls, the only background information asked for in the questionnaires was the gender of the respondent, but in case somebody would absolutely not want to specify their gender there was the option "other/I don't want to say". In the analysis of results, comparisons will be made between the responses of male and female students.

The statement sections of the questionnaires were analysed with the help of Excel, its pivot table feature, and the descriptive statistics tool. The open-ended questions were coded in order to identify any recurring themes, again using Excel. This categorisation will hopefully lead to some helpful insights for teachers to encourage their students' vocabulary development and improve students' learning experiences in digital learning environments. The original questionnaires were in Finnish, but the translated ones are found in the appendices section. In summary, the data is a combination of self-report and observation data, and the study will utilize a mixed methods approach to obtain more reliable research results.

4.1. *Vocabulary.com*

Vocabulary.com is an adaptive online vocabulary learning platform, that works on desktop, tablet, and smartphone, and the mobile app is available for both Android and iOS. *Vocabulary.com* was designed specifically to improve the users' academic vocabulary (Vocabulary.com) and it is a combination of an English language dictionary (monolingual) and an adaptive vocabulary learning game (Vocabulary.com). On *Vocabulary.com*, it is possible to create one's own word lists to study and practise with the game. In addition, there are thousands of ready-made lists of variable length which are arranged according to topic, such as "Leadership Vocabulary", or etymology, such as "Italian Etymologies", or they have been formed on the basis of a certain text; for example, a piece of literature or news, or a well-known speech, such as "Obama, on the 50th anniversary of 'Bloody Sunday'". Among these lists there are ones created by other users, too, because the lists can be made public (they can also be kept private), but many of the lists have been comprised by the Vocabulary.com team. The dictionary is composed of tens of thousands of dictionary entries, including short encyclopaedia type of entries, such as the ones on "Donald Duck" and "Claude Monet". The "Advanced Search" is also a very useful feature in the dictionary. An example of a dictionary entry is found below.

Abrams and Walsh (2014, 51) tersely describe the *Vocabulary.com* game as follows: "The Challenge requires users to identify synonyms and definitions in different multiple-choice questions based on current news sources and classic literature." However, not all the questions include

context, a remark also made by Abrams and Walsh (2014, 52), and often the player only has to choose the best near-synonym or an explanation of the word. Examples of both types of questions can be found below. If the player does not know the word, users are sometimes given "the options, '50/50' and 'Word in the Wild,' [which] respectively enable students to remove two incorrect answers or see how the word is used in authentic sentences drawn from the news or literature" (ibid.). An additional feature of the mobile app is the option "Definition", which gives a very short explanation that helps the user to choose the right synonym or definition (which is, of course, different from the possible answers). After the player has selected the right answer, a longer explanation of the word appears. At the bottom of the screen, the player can also see his or her progress on that particular word (how many definitions of a particular word the player has "mastered", in percentages), "look up" the full definition in the dictionary, "listen" to the word's pronunciation, or add that particular word to his/her word list. While playing, the user can constantly see the overall number of points s/he has earned. On the website, we find the following information on how the player's score is calculated: "Each Assessment, Progress, and Mastery Review question is initially worth 100 points. If you click on a hint, the question is then worth 50 points. Each review question is worth 75 points" (Vocabulary.com). After the player has answered ten questions, or played one "round", the app shows how well s/he scored and how much progress was made. An example of this can also be found below. In addition, as the player earns more points, s/he can gain level badges on *Vocabulary.com*: "Everyone starts out as a Novice and moves their way up to becoming a Word Czar" (Vocabulary.com). For example, after the player has earned 5,000 points, s/he earns the badge *Hotshot*, with 25,000 points the badge *Phenom*, and so on. There are altogether 20 level badges and 100 million points are needed to achieve the highest badge *Word Czar*. As we can see, the reward structure of *Vocabulary.com* is carefully crafted, but rewards, or points and badges, are only one element of games.

crone

The haggard old woman who lives down the street in a ramshackle house, shaking her fist while chasing children out of her yard? You might call her a crone, if you're brave. (But be careful: the term is insulting.)

Since the late fourteenth century the word *crone* has been a term of abuse describing old and bad-tempered women. It traces back to the Anglo-French word *charoine*, meaning "dead flesh." Most people don't like being described as dead flesh, and if the person happens to have a bad temper also . . . well, you can see that it's not a term you want to toss around lightly. You're more likely to hear it used in a Shakespeare play than in real life.
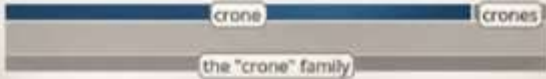
DEFINITIONS OF:

crone

1

n an ugly evil-looking old woman

Synonyms: beldam, beldame, hag, witch

Type of: old woman
a woman who is old

WORD FAMILY

crone — crones
the "crone" family

USAGE EXAMPLES

The years had bent her spine and put a **crone's** hump upon her back, but the widow's eyes were bright and black.
Literature Jul 12, 2011

"It was just so incredibly unfair," said **Crone**, who resigned at the end of last year because of ongoing health problems.
Washington Post Feb 28, 2015

"And there's the **crone** outside in the garden, with her crookedy hands full of rainbow!"
Literature Jan 1, 2000

Streep was the Into the Woods Witch — first an aged **crone**, then a sexy young thing — and she sings, too.
Time Jan 15, 2015

Next

All Sources

Figure 1. The entry for *crone* on Vocabulary.com. (Screenshot from the mobile app.) Text from Vocabulary.com (http://www.vocabulary.com), Copyright Â©1998-2015 Thinkmap, Inc. All rights reserved. Reprinted with permission.
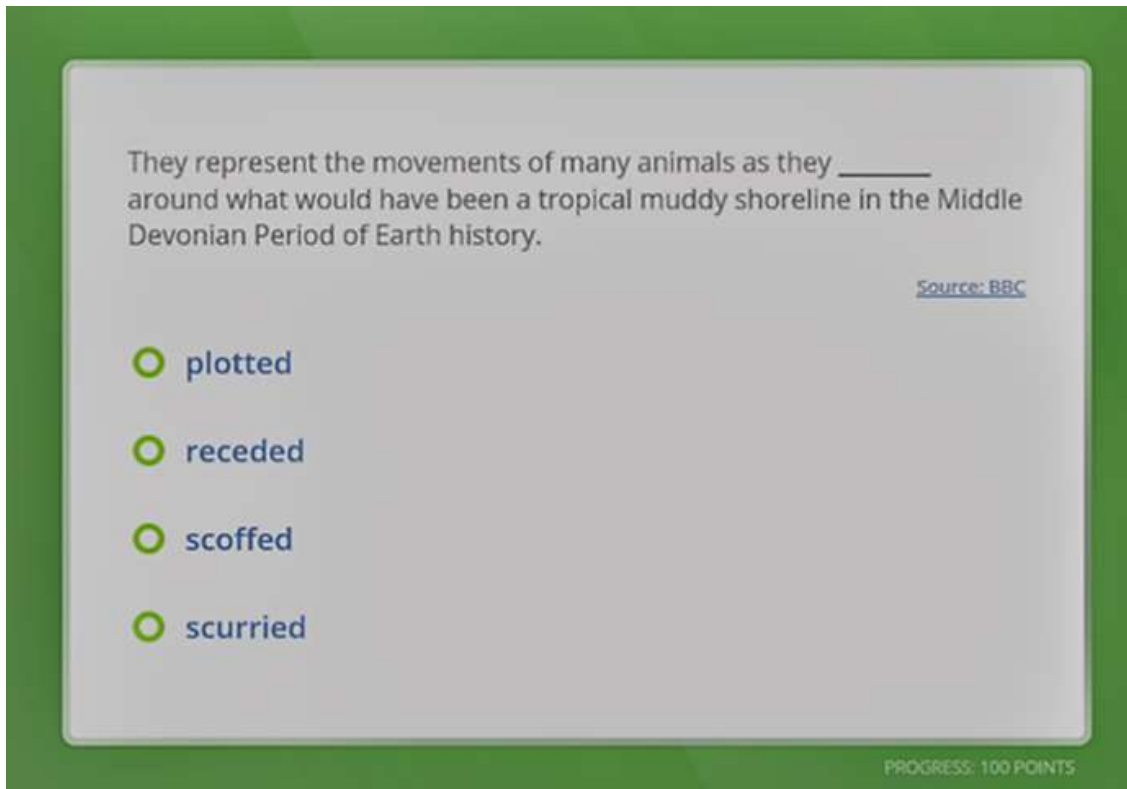
Figure 2. An example of a multiple-choice question which employs context. The sources of the example sentences are always widely known, such as BBC in this case. (Screenshot from the mobile app.) Text from Vocabulary.com (http://www.vocabulary.com), Copyright Â©1998-2015 Thinkmap, Inc. All rights reserved. Reprinted with permission.
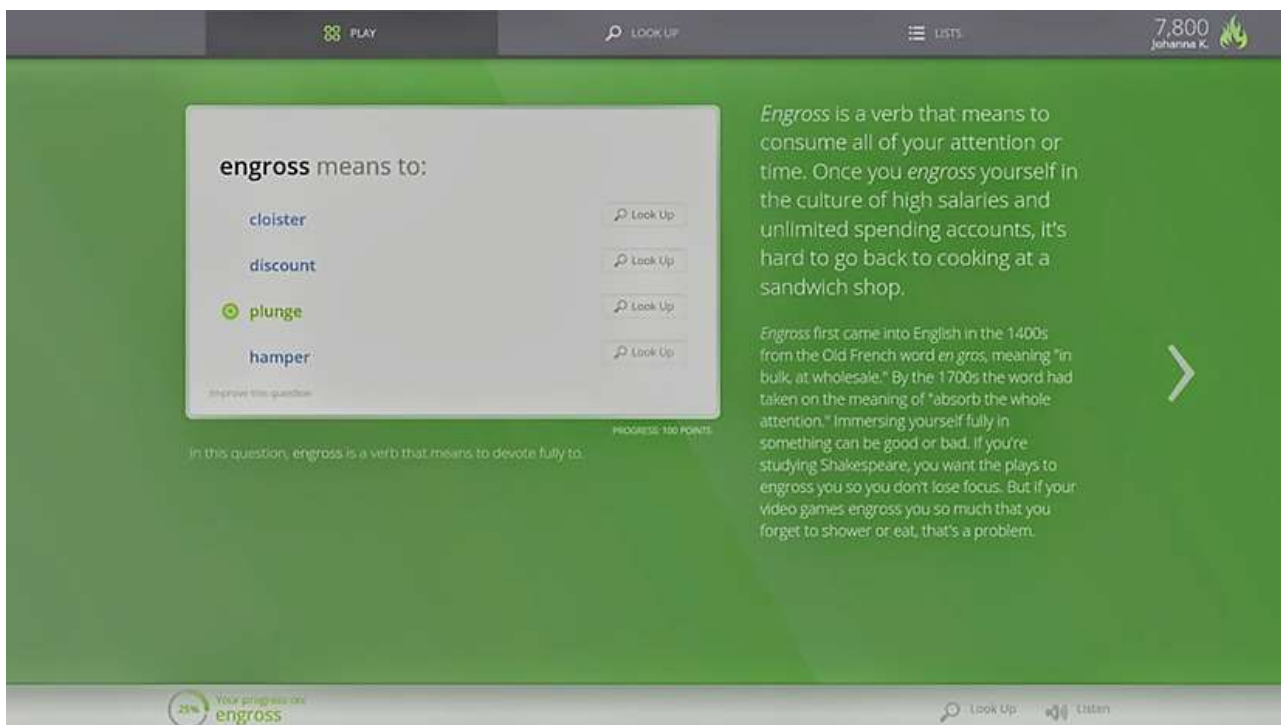

Figure 3. An example of a multiple-choice question without context and the explanation that appears once the question is answered. (Screenshot from the mobile app.) Text from Vocabulary.com (http://www.vocabulary.com), Copyright Â©1998-2015 Thinkmap, Inc. All rights reserved. Reprinted with permission.

32

Figure 4. Feedback is given to the player after a set of 10 questions has been answered. (Screenshot from the mobile app.) Text from Vocabulary.com (http://www.vocabulary.com), Copyright Â©1998-2015 Thinkmap, Inc. All rights reserved. Reprinted with permission.

The different game elements distinguished by Kapp (2012, 13–18) were interactivity, storytelling, problem solving, competition, conflicts and challenges, collaboration, feedback, and rewards. Rules were also mentioned above as an important part of games, and aesthetics, or the visual elements, are also present basically in every game (Kapp 2012, 46). Of these elements, the ones employed on *Vocabulary.com* are interactivity, competition, challenges, feedback, and rewards. The rules of The Challenge are very simple, and visually the platform is quite appealing, although there are few pictures. Interactivity refers to the interactions of players "with one another, with the game system, and with the content presented during the game (Kapp 2012, 8). On *Vocabulary.com* players do not really need to interact with other players, but The Challenge does have a leaderboard which adds a social component to the game. According to Kapp (2012, 34), "[t]he leaderboard is a list of the top scores in the game so whoever plays the game could see all the players' names or initials and scores. It was a simple invention but created a powerful motivator to play the game again and again and gave players a chance to socially interact in discussions around the game and high scores." When students join a class created by their teacher in Educator

Edition, they can see how their classmates are doing in the game, instead of seeing the top scores of all players worldwide, which creates competition between the classmates. The game in *Vocabulary.com* is called "The Challenge", so even the name implies that its aim is to provide English learners with vocabulary-related challenges. Kapp (2012, 35) writes that "[f]eedback in games is almost constant", and this is also true of *Vocabulary.com*. The player is constantly shown his or her progress in learning a word and also gets feedback after each round. In addition, the website has a section called "My Progress", where learners can track their overall progress besides their progress on individual words. The reward structure of The Challenge was already discussed above.

However, as we can see from the list provided by Kapp, some important elements are also missing from The Challenge. There is no narrative, no real need for problem solving, and little chance for collaboration with other players. According to Kapp (2012, 42) "[w]ell-designed educational games blend a task-related story with interactive game elements to help the player learn the desired behaviors, actions, and thinking patterns that support the desired outcome within a particular context". While the goal of the game, that is to recognise and use new English words in various contexts, can be reached without a narrative, a story would certainly make the game more interesting and engaging, especially for female players. However, although the game itself is not based on a story, the dictionary definitions have nice little stories to help the learner remember the meaning of the word, so in the light of previous research, boys may prefer playing the competitive game instead of reading the dictionary definitions, but the definitions could appeal to girls more. What comes to the element of problem solving, The Challenge is not a task-based game, and answering the questions does not require much problem-solving skills or develop critical thinking. Hung et al (2018, 96) list major game genres for language learning, and among these *Vocabulary.com* would fall under "tutorial games" referring to drill-and-practise games, which is the second most frequent game type among the digital games used in the studies that were reviewed in the article. The most popular game type, according to previous literature, was called "immersive games" by Hung et al. (ibid.), also referred to as task-based or adventure-based games (Tsai & Tsai 2018, 348; Chen et al. 2018, 73). The presence of a narrative was a prerequisite for a game to

be classified in this category, and this type of games were found to be the most beneficial for language learning because they included meaningful tasks. Collaboration is also an important game element that adds meaning to the game, but this is also missing from The Challenge which encourages competition rather than cooperation, and as discussed in the literature review section, collaboration is to some extent a neglected area in the DGBLL research (Hung et al. 2018, 101). However, *Vocabulary.com* users can host a game called "Vocabulary Jam", which makes it possible for the players to answer the questions in teams and collaborate in earning points, which are credited based on the performance of all team members (each member answers the question on their own device). In addition to The Challenge and Vocabulary Jam, the users of *Vocabulary.com* can practise the spelling of words with the help of Spelling Bee, but the player needs to be able to listen to the audio to play Spelling Bee. All of these different games provided on *Vocabulary.com* accumulate the player's score.

Educator Edition is a teacher account provided by Vocabulary.com. With the help of Educator Edition, the teachers can create classes and assignments, monitor student progress, and create custom quizzes (Vocabulary.com). In Educator Edition, the teacher can see how much a particular student or the whole class have played the games in hours, how many questions they have answered, how many points they have achieved, and so on. A very useful feature for teachers of upper secondary schools where it is easier for the students to leave their homework undone is that the teacher can see which students have completed their assignments on *Vocabulary,com*, which words the students have mastered, and which words have caused most trouble.

4.2. Limitations of the study

In this thesis, the initial idea was to study mobile apps, and I wanted to ask the students to get the *Vocabulary.com* app, but as it costs a few euros, it could not be demanded that they purchase it. None of the participants then used the mobile app during the study although some students used their mobile phones to access the website. In addition, my teacher training school did not have a licence for *Vocabulary.com*, so I had to pay for the Educator Edition myself. I also wanted to focus on the objective learning outcomes more, but as I did not have a control group in addition to the

experimental group, I had to rely on my field notes and the students' subjective views, expressed in the questionnaires, concerning their own vocabulary development during the course.

The vocabulary tests were based on the vocabulary lists found in the textbook that was used on the course, and this created some difficulties as they included words that could not be practised with the help of The Challenge. In addition, I did not teach the whole course myself, so I could not be there reminding about the use of the website all the time, and the results might have looked different had that been the case. In addition, I was a novice teacher at the time I made my research, and my lack of experience as a teacher is a factor that may have influenced the results negatively.

4.3. Statements on open data, ethics and conflict of interest

The data used in this study were collected anonymously and stored on my own local hard disk and in Microsoft OneDrive offered by Tampere University. There are no potential conflicts of interest in the work reported in this thesis, because I am not working for Vocabulary.com and I pay for the use of Educator Edition just as everybody else. The reason to study this particular vocabulary learning environment arose from my personal interest, but I hold no brief for this platform, although it has many useful features.

5. ANALYSIS OF RESULTS

As the research design was twofold, the analysis of the survey results, which composes the major part of this section, will be presented first, and the observations made during the English course will be laid out secondly to complement the results obtained by the questionnaires. Some of the results analysed in this chapter have been presented and discussed in an earlier pedagogical work by the author (Ketola 2018).

5.1. Questionnaires

As explained above, two surveys were conducted in order to gain information on the opinions and attitudes of students towards digital games, (online) English dictionaries, *Vocabulary.com*, and the impact of the last mentioned on the students' motivation and learning outcomes. The results of the surveys will be presented chronologically, so that the questionnaire distributed at the beginning of the course will be discussed first, and the questionnaire filled by the students at the end of the course secondly. Questionnaire 1 was answered by 28 (16 females, 9 males, 3 not specified) first-year students (ENA2) and 22 (14 females, 7 males, 1 not specified) second-year students (ENA6) whereas Questionnaire 2 was answered only by 25 (15 females, 7 males, 3 not specified) first-year students who had had a chance to familiarise themselves with *Vocabulary.com*. The questionnaires as well as the frequency tables of survey responses can be found in the Appendices section.

5.1.1 Likert items of Questionnaire 1

The most important objective of this thesis was to investigate the attitudes of Finnish upper secondary school students towards (monolingual) dictionaries and digital vocabulary learning games. I wanted to find out whether the students like playing digital or online/video games in general and if they find digital vocabulary games useful for learning languages. None of the students that answered the questionnaires disagreed on the usefulness of digital vocabulary games in learning new words. Among the first-year upper secondary school students, 14 % of the respondents (n = 28) had neutral or did not have an opinion on the matter (neither agreed nor disagreed), 54 % agreed, and 32 % agreed strongly, and among the second-year students (n = 22) only 5 % neither agreed nor disagreed, 45 % agreed, and 50 % agreed strongly (item 3, cf. Fig. 5). Thus, the great majority of the surveyed students thought that digital vocabulary learning games, such as *Duolingo*, WordDive, *Quizlet*, and vocabulary games by *Otava*, are useful, and very few respondents had neutral or no opinion on the matter. However, the second-year students, who probably have more experience of using different vocabulary games as a means to learn new words, had slightly more positive attitudes towards this kind of educational games, although the lower number of respondents in the group of second-year students may have affected the results,

too. Overall, the students had also surprisingly positive attitudes towards all kinds of vocabulary learning as only 10 % of the 50 respondents disagreed on the statement "I think learning new English words is fun" (item 8), which implies very positive emotions. Although 40 % selected the midpoint alternative, and it is possible that some of them would have actually disagreed had they been forced to select from the other alternatives, still 50 % of the students had very positive attitudes towards studying vocabulary.
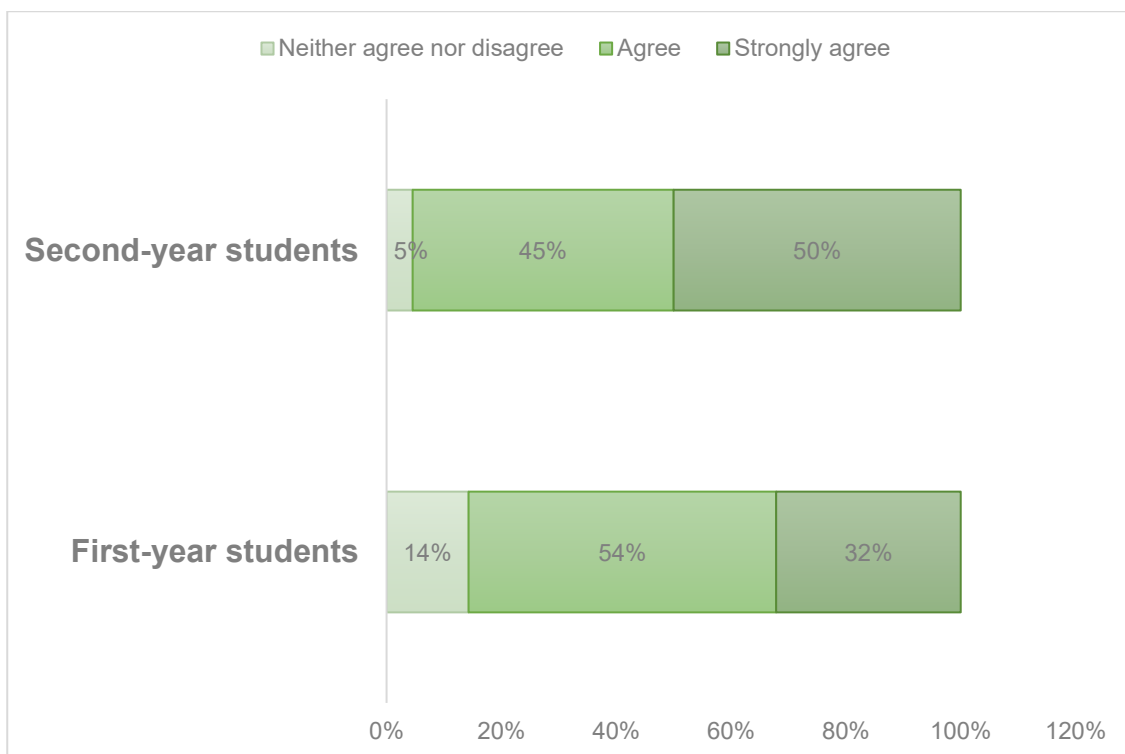

Figure 5. Students' views on the usefulness of digital vocabulary learning games *in general* (item 3).

Although male and female students were unanimous regarding the survey question on the usefulness of digital vocabulary learning games, girls had more negative attitudes towards playing video games and/or online/mobile games in their free time than boys (item 1, cf. Fig. 6). As we can see in Figure 6 below, on average, boys agreed on that playing games is a nice way to spend free time (M = 4.0) whereas girls disagreed (M = 2.7). In Chi-Square analysis, the value of p was 0.032 (p = 0.032, α = 0.05), and as the value is smaller than 0.05, which means that the finding is statistically significant, there clearly is a relationship between the variables of gender and preference for gaming as a free-time activity. The difference between the mean values of male and

female students was significantly smaller among the second-year students (males: M = 3.7; females: M = 3.1) compared with the first-year students (males: M = 4.2; females: M = 2.4). Nevertheless, there is not enough evidence for generalisations due to the fairly low number of respondents and the uneven proportions of male and female respondents, and hence, it cannot be said that there are always less gender differences among second-year students. These results support earlier findings of boys being more prone to play video/online games than girls and girls' tendency to play educational games (Inal & Cagiltay 2007, 460 & 462). However, neither female nor male students in the two sets of respondents, except for a few odd ones, thought that playing English-language games feels difficult (item 2). Of all the respondents, 42 % disagreed strongly on the difficulty of English-language entertainment games, 36 % disagreed, 16 % neither agreed nor disagreed, 2% agreed, and 4 % agreed strongly. Considering the respondents who agreed, the proportions were the same between the genders: 6 % of the female students (n = 30) and 6 % of the male students (n = 16) agreed. However, the first-year students considered English-language entertainment games more difficult as among them 12 % of the respondents agreed or strongly agreed on the difficulty whereas among second-year students nobody agreed. These responses suggest that second-year students are more fluent English speakers and that language was not the reason for the female respondents' dislike of video games, although overall, boys gave more positive answers.
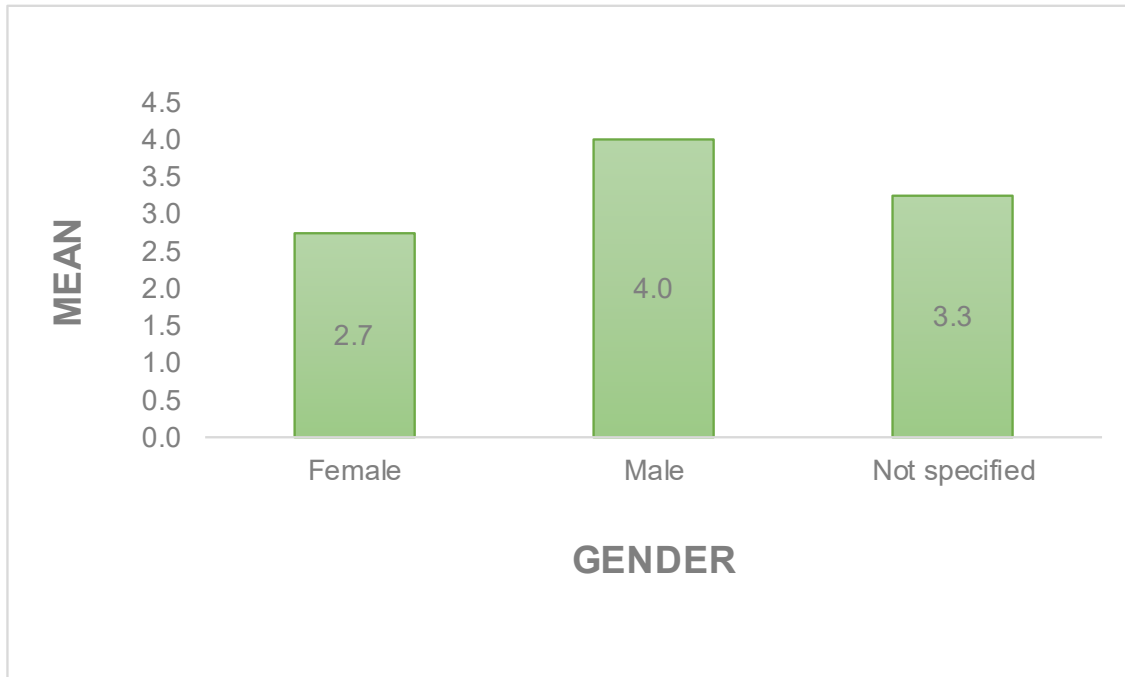
Figure 6. Gender differences in first- and second-year upper secondary school students' views concerning playing video games and/or online/mobile games in the respondents' free time (item 1).

Figure 7. Students' attitudes towards the use of *monolingual* digital games as vocabulary learning tools (item 6).

The students in both sets were open to monolingual vocabulary games (cf. Fig. 7), but less so to monolingual dictionaries. Among the first-year students altogether 60 % and among the second-year students 46 % agreed or strongly agreed on that they would be willing to use a

monolingual English vocabulary learning game to support their vocabulary learning (item 6). An interesting finding here is that in percentage terms first-year respondents were clearly more open to try new monolingual games than second-year respondents, although second-year students are very likely more fluent in English than first-year students. In the cas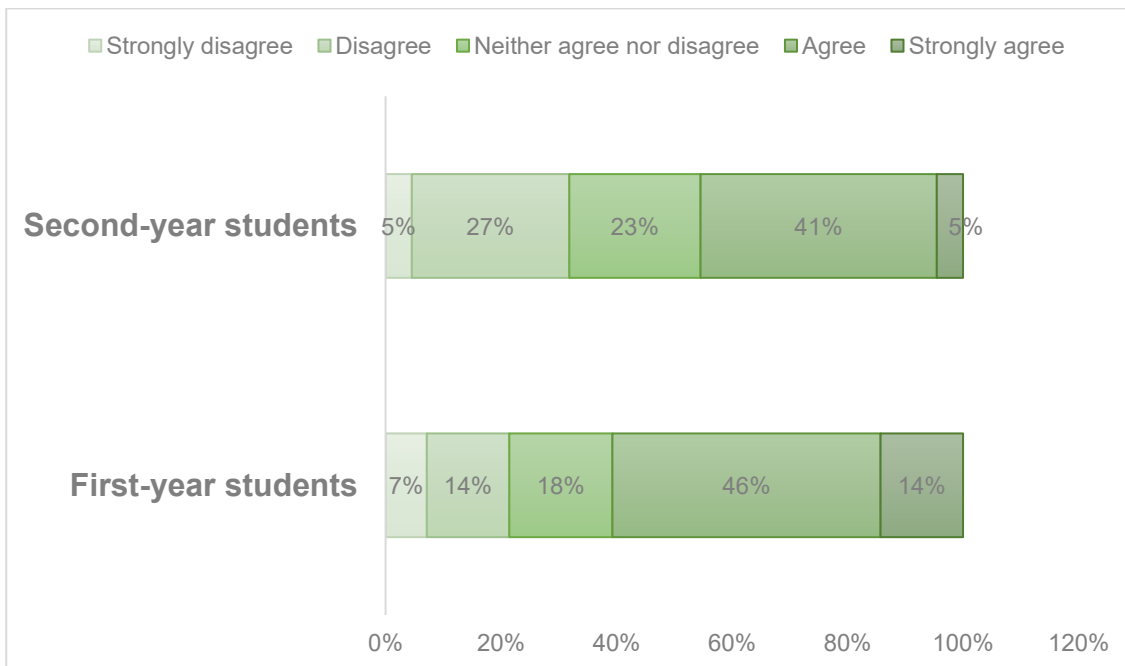e of monolingual dictionaries, the pattern was similar. Among the first-year students, 18 % said that they like using monolingual (English-English) (online) dictionaries or dictionary applications to learn new English words, whereas only 5 % of the second-year students said the same (item 11). In both groups, students preferred using bilingual (Finnish-English) dictionaries to using monolingual dictionaries (item 12). Among first-year students, altogether 79 % of the respondents agreed or strongly agreed on that they prefer using bilingual dictionaries while 21 % neither agreed nor disagreed, and among the second-year students, altogether 87 % agreed or strongly agreed on the matter while 9 % neither agreed nor disagreed, and 5 % strongly disagreed. Thus, there was one student who clearly preferred using monolingual dictionaries to using bilingual ones, and the greater proportion of students who selected the midpoint alternative among first-year students suggests that rather than having a neutral opinion they probably were undecided due to lack of experience.

Another very important objective of this thesis was to study the impact of the use of *Vocabulary.com* and digital learning games in general on upper secondary school students' motivation regarding learning new vocabulary. For digital learning games in general, the difference between the two groups of students was very visible. The statement concerning the impact of the vocabulary learning games on the students' motivation was negatively phrased to avoid persuading the respondents: "Vocabulary learning games do not affect my motivation to learn new words" (item 9). While only 32 % of the first-year upper secondary school students disagreed with the statement, the corresponding figure in the group of second-year students was 77 % (cf. Fig. 8). As Figure 8 below shows, there were also significantly fewer respondents who were undecided (neither agree nor disagree) among the second-year students compared to first-year students. In addition, there was much more variation in the responses of the second-year students, which can be noticed by looking at Figure 8, but also by counting the standard deviations. Standard deviation measures the dispersion of scores from mean score, and the standard deviation of the group of

first-year students is 0.7927 (SD = 0.7927) whereas that of the group of second-year students is 1.0022 (SD = 1.0022). The mean of first-year students' responses is approximately 3.0 (M = 2.964) while the mean of second-year students' responses is 2.4 (M = 2.364), and thus, the majority (approx. 68 %) of first-year students' responses fall between 2.2 and 3.8 whereas the majority of second-year students' responses fall between 1.4 and 3.4. These values show that the second-year students were inclined to disagree with the statement while first-year students had neutral or no opinion, and it is highly probable that most respondents who chose the midpoint did not know whether games affect their motivation, although it is possible that they were only poorly motivated to respond either for or against. These results again suggest that second-year students are more familiar with vocabulary games than first-year students and have noticed the positive influence of such games on their motivation whereas the first-year students' attitudes are more undecided—possibly because of their inexperience.
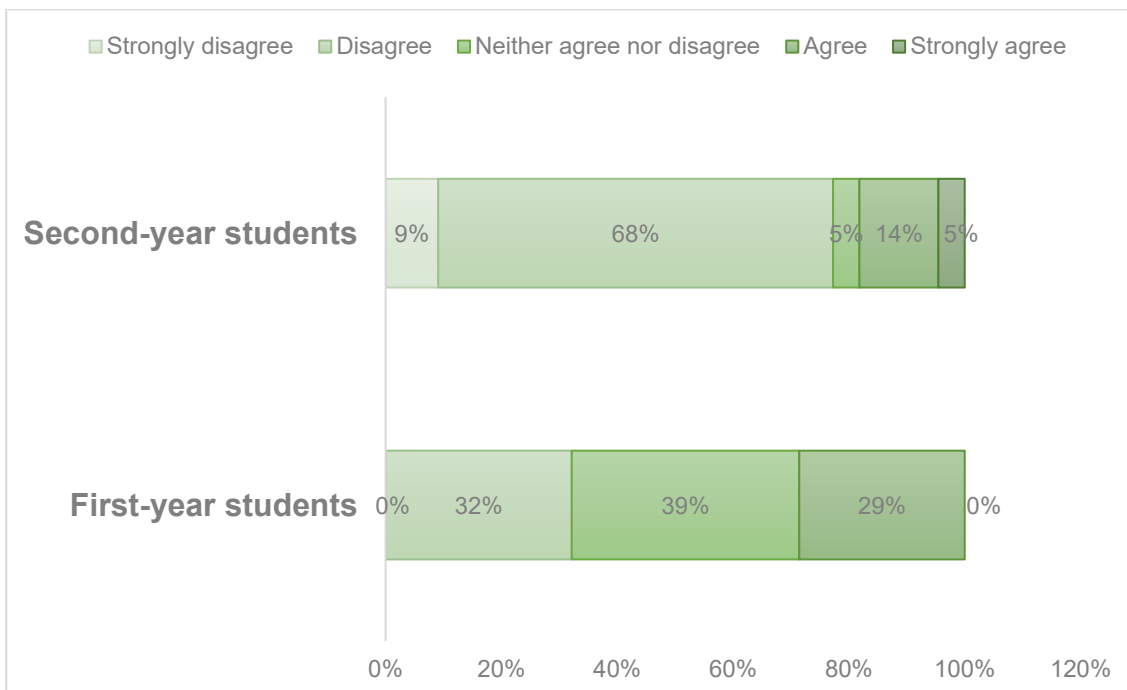

Figure 8. First- and second-year students' subjective views concerning the impact of vocabulary learning games on their motivation, where disagree means that the games affect their motivation (item 9).

Competition is a central game element in The Challenge, so Questionnaire 1 included a statement that aimed at finding out how effectively competition motivates students (item 10).

Almost half of all the respondents, 46 %, agreed on that the element of competition in games motivates them to study English words, which is quite a high percentage considering that at least 30 of the 50 respondents were girls (16 boys, 4 not specified), and in earlier studies it was concluded that boys find competition motivating but it does not really motivate girls. The results of this study do not support the earlier findings in this respect because in Chi-Square analysis, the value of p was 0.501 ($p = 0.501$, $\alpha = 0.05$), and as the p-value is noticeably greater than 0.05, there is no relationship between the variables of gender and competition as a motivating element. The comparison between the responses of all the male and female students is shown below (Fig. 9), but first- and second-year students are not contrasted in this graph because the answers of male and female students were quite similarly distributed in both student groups. Among the first-year students, competition was, however, seen slightly more positively, as 55 % of the males and 44 % of the females stated that it motivates them. Thus, on the basis of the first survey, it could be expected that *Vocabulary.com* as an educational game that is based on competition would get a somewhat similar reception among both girls and boys.
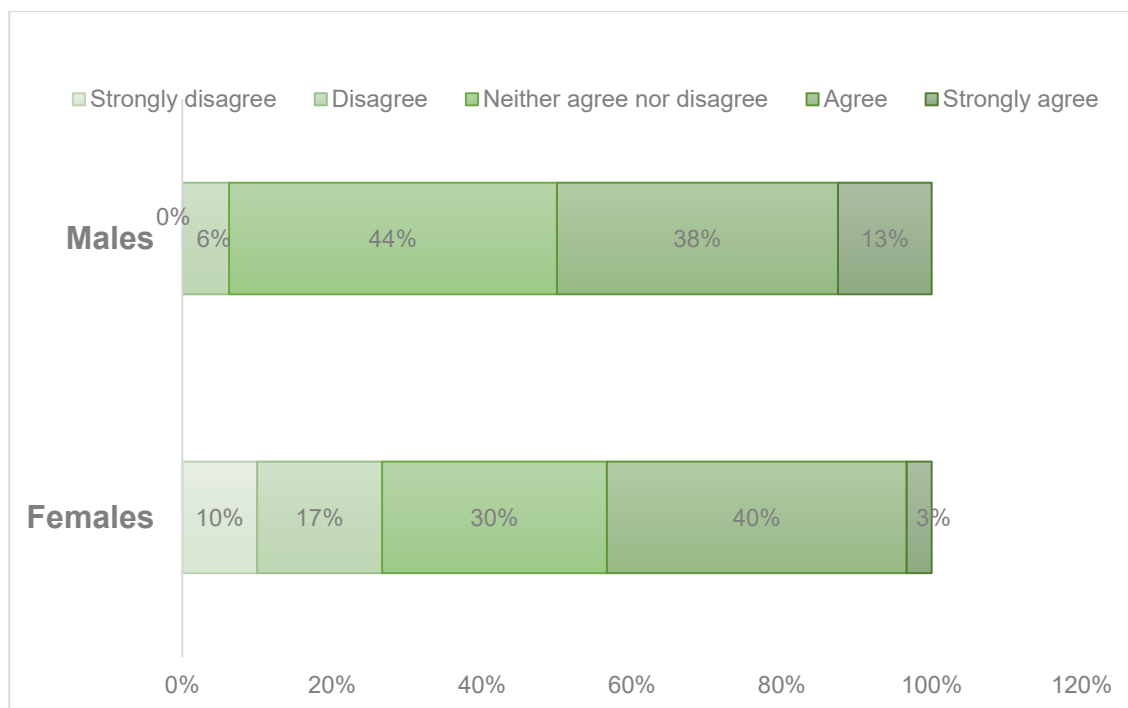

Figure 9. Male and female students' subjective views concerning the effect of competition in a game on their motivation to study English words (item 10).

Lastly, Questionnaire 1 included one statement that investigated the respondents' attitudes towards *Quizlet*, which is a widely used vocabulary learning platform in Finnish lower and upper secondary schools. According to the website (Quizlet.com), *Quizlet* is the most popular online educational service in the U.S. It is similar to *Vocabulary.com* in that the interface is also in English (and some other languages, but not in Finnish), there are vocabulary lists that can be either picked from ready-made ones or created by the users and the words in the lists can be practised upon with the help of different games, and there is a separate teacher account (not free) for tracking student progress. *Quizlet* can also be used to learn other things than just vocabulary and it is well known for its flashcard feature. It is different to *Vocabulary.com* in that it does not include a dictionary and points are not accumulated through playing the games, and hence, there is no leaderboard either, so it does not create competition as *Vocabulary.com* does. Thus, it was valuable to hear the participants' opinions about this popular platform. Among the first-year students, 43 % agreed strongly, 43 % agreed, 11 % neither agreed nor disagreed, and 4 % disagreed on the statement "I like to use *Quizlet* when I'm learning new English words" (item 7). The second-year students were even more positive in their answers as 68 % agreed strongly, 27 % agreed, 0 % neither agreed nor disagreed, and 5 % disagreed. Hence, altogether the students who took this survey were very unanimous in their responses, and they undoubtedly appreciated *Quizlet* as a vocabulary learning tool. In addition, this questionnaire item further strengthens the hypothesis that second-year students are more experienced in relation to vocabulary learning games since everybody had an opinion, unless the first year-year students who selected the option "neither agree nor disagree" were really neutral in their opinion.

5.1.2 Open-ended questions of Questionnaire 1

Firstly, the respondents were asked how they prefer to study new English words (question 13). The chart below (Fig. 10) shows the categorization that was used when the answers were coded, and the frequencies show that more than one way of learning words were found in the responses of several students. The chart clearly demonstrates that playing vocabulary games is the most preferred way of learning new vocabulary among upper secondary school students as 36

respondents referred to them in their answers. Almost all of these respondents mentioned *Quizlet* and *WordDive*, and video games were also mentioned by a few students. The following (translated) quotes are examples of answers that were categorized only into "games":

(1) With different kinds of vocabulary games, for example using Quizlet

(2) Using Quizlet or WordDive, with them one can study vocabulary in an easy and fun way

(3) Quizlet and through video games

The second most popular method for learning new words was reading the vocabulary lists in English textbooks and vocabulary exercises were also mentioned. Some students said they only use the textbook if anything, but in most responses, in addition to textbook, the students mentioned also some other way of studying words, usually *Quizlet*, which is, indeed, an easy way to revise the textbook vocabulary lists as other teachers have made public wordlists for most of the texts that are found in the English textbooks used in Finland. The following quotes are examples of a combination of two different categories with one being "textbook":

(4) I read vocabulary lists or use Quizlet flashcards ("textbook" and "games")

(5) by reading vocabulary and asking a friend ("textbook" and "with other people")
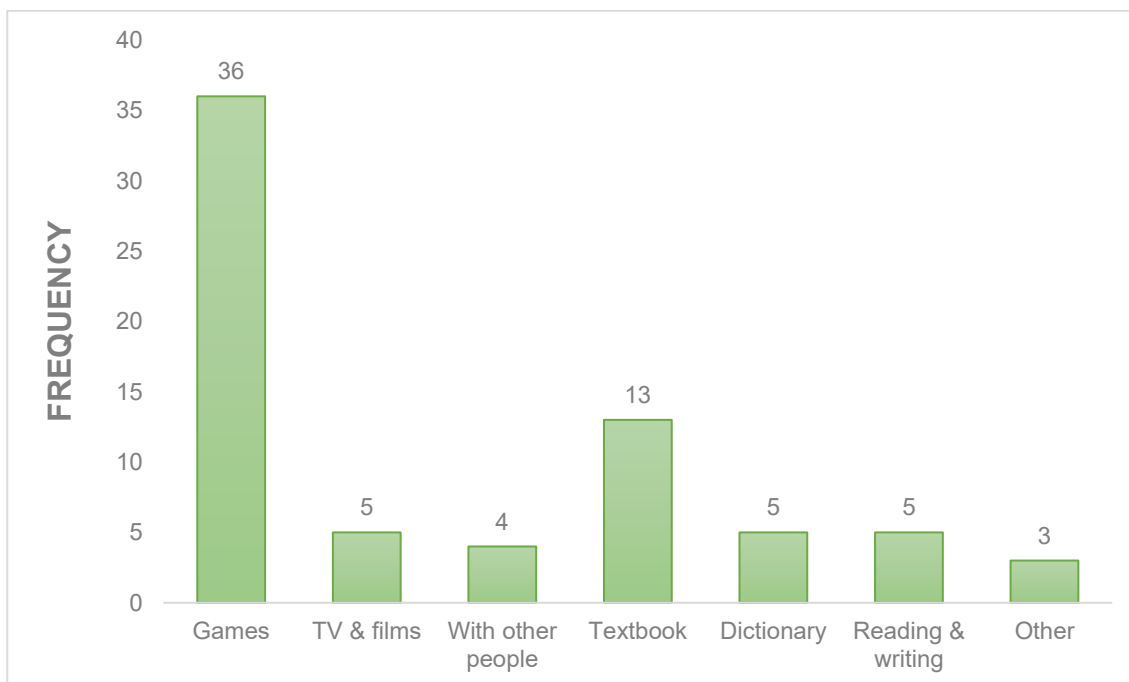

Figure 10. The students' preferred ways of studying new English words (question 13).

Several female students mentioned *Netflix* or watching TV and films as a way to learn English words whereas none of the male students said the same. Browsing or finding words in a dictionary and reading or writing down words were also themes that emerged from the students' answers. However, nobody mentioned reading novels etc., so presumably reading refers to reading words in the textbook, and hence, the categories "textbook" and "reading & writing" may be to some extent overlapping. The quotes below are examples of answers including the categories that were each mentioned by five students:

(6) Watching Netflix ("TV & films")

(7) I watch English-language programmes/series from which I learn new words. I also listen to English-language music, so also in that way. ("TV & films" and "other"))

(8) writing down and then reading, quizlet ("reading & writing" and "games")

(9) Quizlet is good / browsing a dictionary ("games" and "dictionary")

The second open-ended question aimed at finding out which digital games or apps the students have made use of when learning English words. It is no wonder that *Quizlet* was the most often mentioned game, but there were also many others (not an all-inclusive list): WordDive, Duolingo, vocabulary games by *Otava, Fortnite, Call of Duty, World of Warcraft, FIFA (video game series), Clash of Clans, Hay Day, Sims, LittleBigPlanet, Runescape, Sanakirja.org, Google Translate, YouTube*. As can be seen from this list, the students really see video games as important vocabulary learning tools besides educational games, and touching on this subject, one respondent made a very insightful comment:

(10) Quizlet is one of the most common ones. Other video games also teach a lot of new words, although they wouldn't be for that purpose at all.

YouTube is unquestionably an important learning tool for the younger generations, as well, but in the responses to the open-ended questions it was only mentioned by two students. This could suggest that *YouTube* is typically not seen as teaching words but rather other kinds of skills or purely as entertainment, as it is quite certain that also other respondents watch English-language material on *YouTube* and learn new words without even taking notice.

Thirdly, the respondents were asked to identify dictionaries they normally use. Among the first-year students nobody, except for one student who said they use *Urban Dictionary*, mentioned monolingual dictionaries (otherwise only bilingual ones mentioned), although 18 % stated that they

like using monolingual (English-English) (online) dictionaries or dictionary applications to learn new English words. Among second-year students one student said that they use *Merriam-Webster* rarely and another said they usually use *Oxford Dictionary*. As Figure 11 below shows, the three most frequently mentioned dictionaries, respectively, were *Sanakirja.org, Google Translate,* and textbook (at the end of English course books used in Finland, there is typically a glossary or a "mini-dictionary"). Other dictionaries mentioned were *Sanakirja.fi/MOT*, *Suomienglantisanakirja.fi*, and *Wiktionary*. A bilingual (Finnish-English) paper dictionary was mentioned in one questionnaire answered by a female second-year student, but apart from English textbooks only online dictionaries were mentioned in the rest 49 questionnaires. However, there were a few answers which read that the respondent does not use any dictionaries. This probably suggests the respondents' limited view of what a dictionary is rather than suggesting they never check a meaning of a word somewhere to understand it, as in a very wide sense even googling a word and looking at the images to decipher the meaning of the word can be compared to looking up the word in a dictionary.
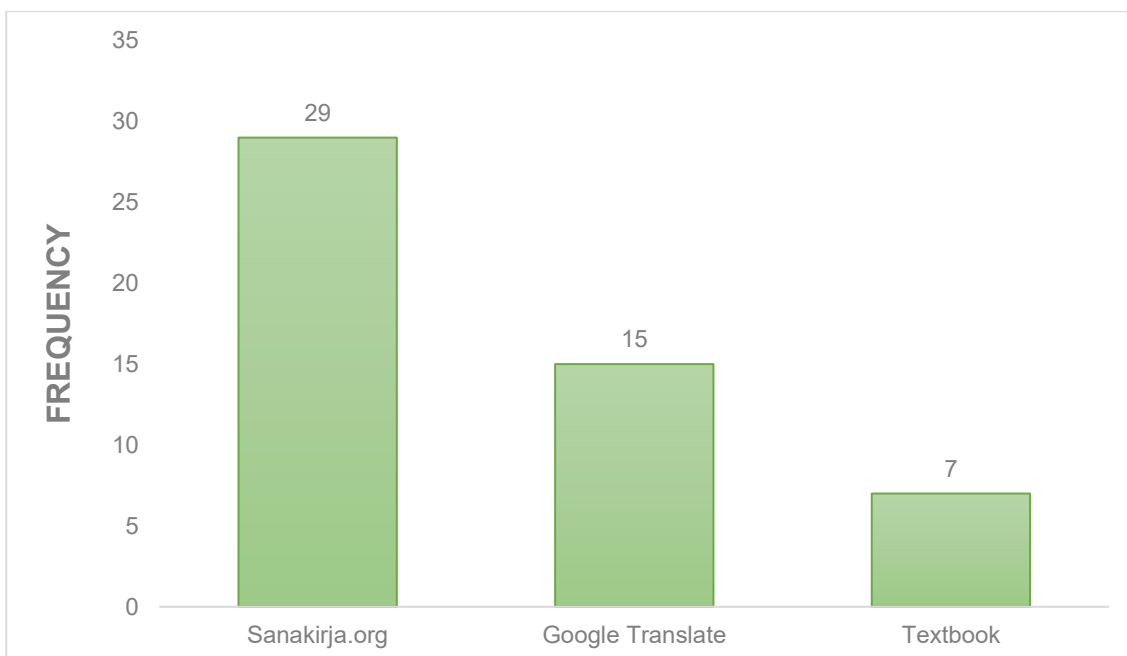

Figure 11. The three most frequently used dictionaries or dictionary-type tools by Finnish upper secondary school students (question 15).

5.1.3 Likert items of Questionnaire 2

Vocabulary.com is a monolingual vocabulary learning platform that combines a game and a dictionary, and this was the reason behind testing this particular platform to further investigate the reception of monolingual games and dictionaries among Finnish upper secondary school students. To find out how the participants had felt about testing *Vocabulary.com*, the following statement was included in Questionnaire 2: "I liked testing a new vocabulary game a lot" (item 4). Of the total number of respondents, 60 % agreed or strongly agreed, 16 % neither agreed nor disagreed, and 24 % disagreed or strongly disagreed, but of the male students all respondents agreed. This finding indicates that incorporating games into language learning really is a welcome change especially for boys and may promote their school well-being, as well. As Figure 12 shows, *Vocabulary.com* was also deemed clearly more useful by boys than by girls, since 71 % of the males agreed while only 20 % of the females agreed (item 6). As two thirds of the subjects were girls, the proportion of those who agreed on the usefulness of *Vocabulary.com* of the total number of respondents was 36 %. Boys evidently believed that the use of the platform could improve their performance, and it can be said with quite a high degree of certainty that *Vocabulary.com* is likely to have a better reception among male students of Finnish upper secondary schools. As explained in Chapter 2, in Technology Acceptance Model (TAM), perceived usefulness is seen as the most important factor influencing users' attitudes toward using computer systems and behavioural intentions to use the systems. Hence, the survey results concerning item 6 perhaps most clearly communicate the reception and use of *Vocabulary.com* among the respondents. Nevertheless, when the respondents were asked if they would have used *Vocabulary.com* more if they had had the mobile app on their phone (item 11), 36 % of the students either agreed or strongly agreed, so it could be hypothesized that the subjects would have found the platform more useful had they had the chance to make a better use of their personal mobile devices.
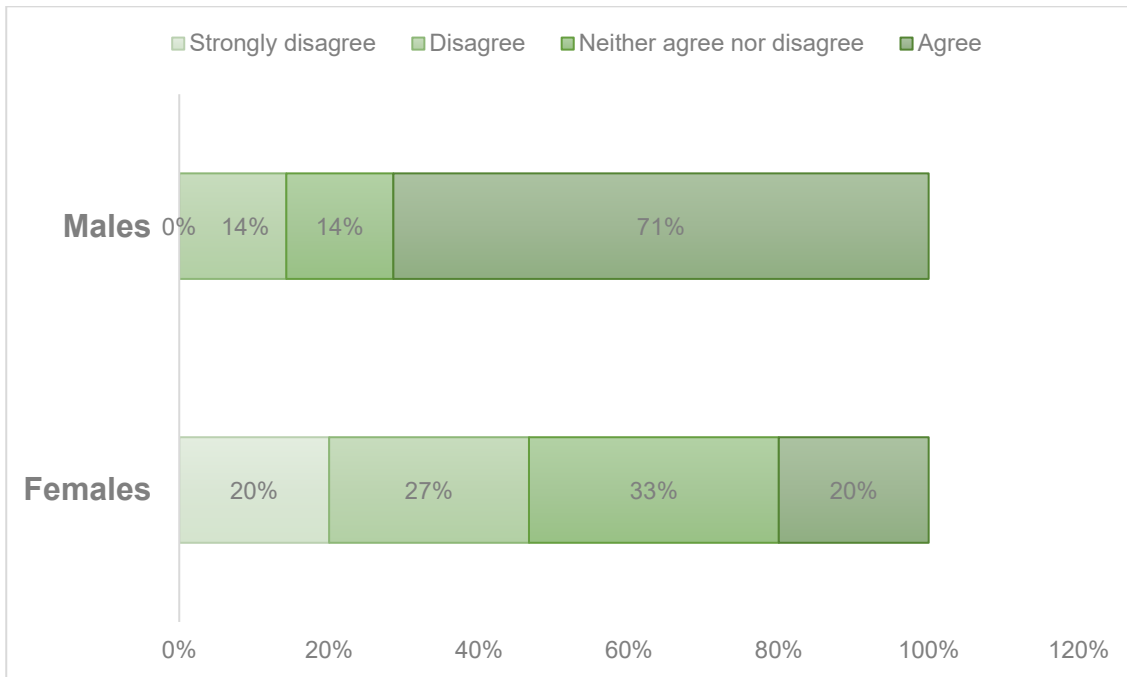
Figure 12. The perceived usefulness of *Vocabulary.com* in learning new English words and preparing for the word tests (item 6).
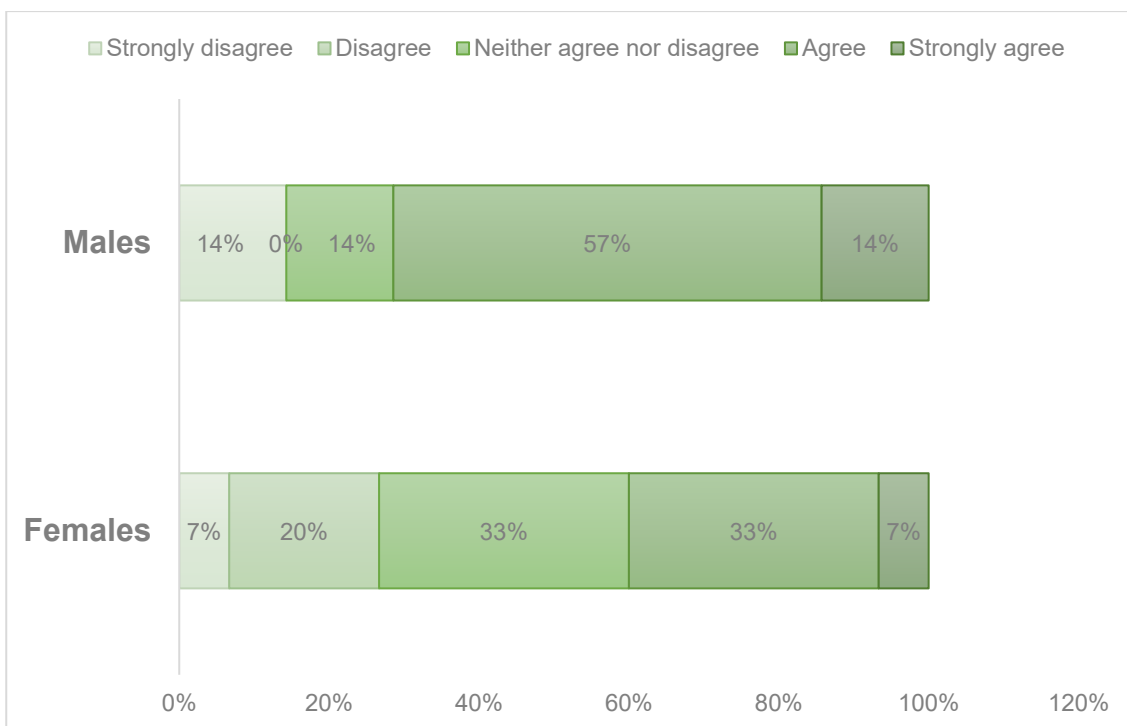
Figure 13. The perceived ease of use of *Vocabulary.com* despite the fact that it is monolingual (item 8).

The other key variable in the model is perceived ease of use, and item 8 aimed at finding out how easy the platform was to use in the opinion of the students. More than half (52 %) of all the respondents said that *Vocabulary.com* was easy to use even though it was in English only, 24 %

had a neutral opinion or could not say, and 24 % said it was not easy to use. Figure 13 above shows that ease of use, just as usefulness, was rated higher among boys than girls, which is not a surprise because according to TAM, the ease of use influences the perceived usefulness. While only 40 % of the female respondents agreed on the ease of use, the corresponding figure among males was 71 %, which is exactly the same percentage that agreed on the usefulness of *Vocabulary.com*. Thus, among male students these two variables are very highly correlated while the difference in the figures among females indicate that other variables must have affected the perceived usefulness more than ease of use. According to TAM, perceived usefulness is equal to perceived ease of use combined with external variables (Davis et al. 1989, 987). For example, in *Vocabulary.com* an external variable that affects the perceived usefulness could be its effectiveness to communicate the meaning of a given word. If the students compare this platform to *Quizlet* or *Sanakirja.org*, they might feel that the lack of a Finnish translation has such a negative impact on their understanding of a word's meaning that they cannot see *Vocabulary.com* as a useful tool in their context. However, according to the questionnaire responses, as the language of the interface was not a problem for most of the respondents, the English-only content of *Vocabulary.com* was not experienced difficult either (item 9). Of the total number, only 12 % of the respondents had found it difficult to understand the explanations in the dictionary of *Vocabulary.com* and/or the questions in the game, 40 % were neutral or did not know what to think of them, and 48 % did not find them difficult. Again, none of the boys said they found *Vocabulary.com* difficult and 72 % disagreed on the difficulty, but among girls there was more variation and more than half (53 %) of them neither agreed nor disagreed (cf. Figure 14). These results suggest that the fact that *Vocabulary.com* is monolingual and does not employ Finnish language was not a central problem in either gender group, and even less so for the boys, but *Vocabulary.com* seems to have other system-internal features than ease of use or language that affected its reception especially among girls.
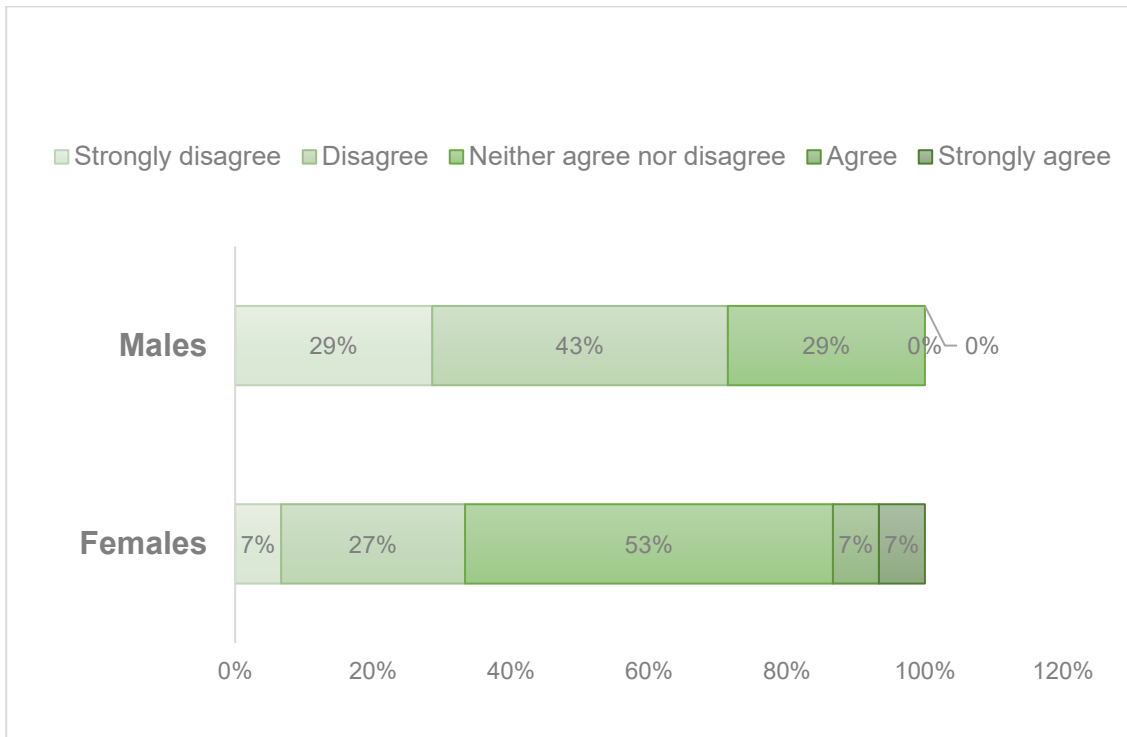
Figure 14. Difficulties in understanding the explanations in the dictionary of *Vocabulary.com* and/or the questions in the game (item 9).

The first research question also aimed at uncovering students' attitudes towards monolingual dictionaries, and as it was possible to see if any change had occurred in first-year students' attitudes, the last item (item 12) in Questionnaire 2 was the same as item 11 in Questionnaire 1. As was expected, the participants' attitudes were slightly more positive after the intervention period. At the beginning of their second obligatory English course, only 18 % of the main subjects of this study said that they like to use monolingual (English-English) (online) dictionaries or dictionary applications to learn new English words, but at the end of the course 24 % said the same. The responses of the first-year students to the first and second questionnaire are contrasted in Figure 15 below. Hence, it is possible that the use of monolingual dictionaries, such as *Vocabulary.com* and *Oxford Learner's Dictionary*, during the course had influenced their views and made monolingual dictionaries more accessible to the students, but the difference is so little and the number of respondents so low that this is making hypotheses rather than establishing facts.

The survey results concerning the impact of the use of *Vocabulary.com* on upper secondary school students' motivation for learning new vocabulary run parallel with those concerning the students' attitudes towards the platform. When looking at the responses of all the participants, it seemed as if *Vocabulary.com* was not perceived as very motivating as 55 % of the respondents agreed on the statement "*Vocabulary.com* did not affect my motivation to learn new vocabulary", with 32 % strongly agreeing. Only 8 % of all the respondents disagreed. However, after crosstabulation, a somewhat different picture emerged. While 74 % of the female respondents said that *Vocabulary.com* did not affect their motivation, only 14 % of the male students agreed. Although 57 % of the boys had neutral or no opinion on whether *Vocabulary.com* had affected their motivation, 29 % said it had an effect while none of the female students could say the same (cf. Figure 15). However, when the respondents were asked if the points achieved in the games of *Vocabulary.com* motivated them to practise English words, 20 % of all the respondents agreed. Among boys 28 % found the score motivating, and even among girls 13 % were motivated by the score. Although half of the students could not be motivated by rewarding them with points, it is not possible to say that they were not of a competitive type, because in the first questionnaire it was established that only 22 % of the first-year students said that competition in games does not motivate them to study English words. Thus, it is more likely that the points and the leaderboard of *Vocabulary.com* were not enough to create real competition, or then the respondents had not played the game enough to be fully engaged in the competition. The latter explanation is more likely to be correct, as the student who had answered the most questions in the game, was also of the opinion that the score on *Vocabulary.com* is very motivating.
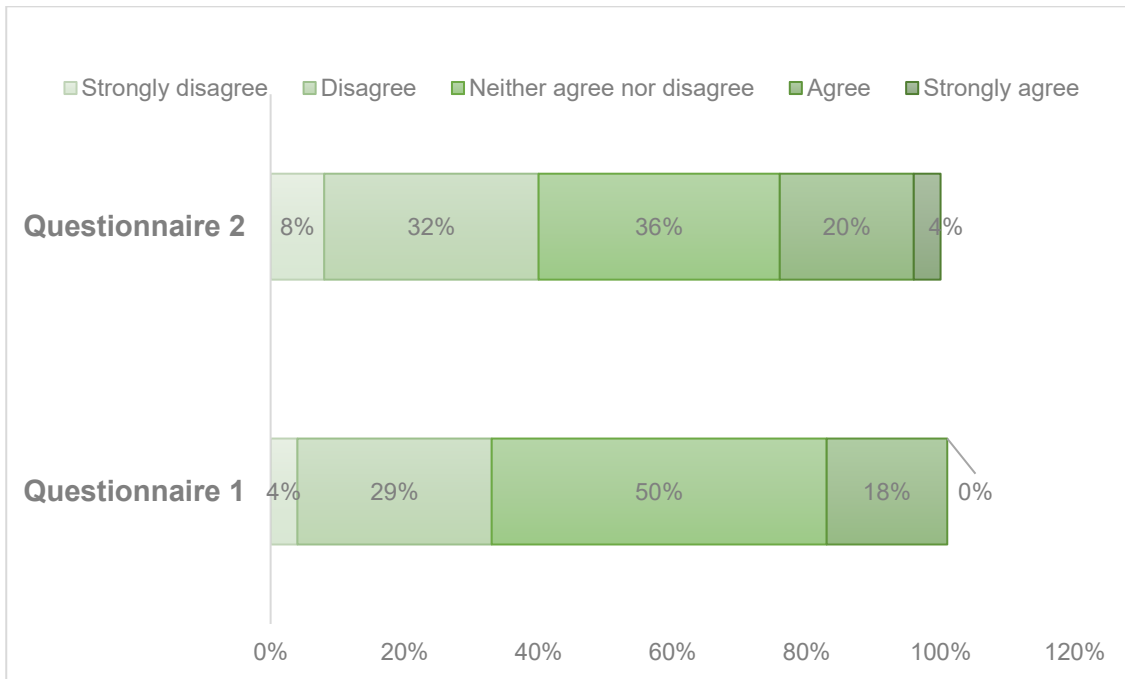
Figure 15. A comparison of first-year students' responses to the statement "I like to use monolingual (English-English) (online) dictionaries or dictionary applications to learn new English words" at the beginning and at the end of the intervention period.

The third research question of this thesis concerned vocabulary learning outcomes. In Questionnaire 2, there were specifically two items (1 & 5) addressing students' views about the impact that *Vocabulary.com* had on their vocabulary development during the second obligatory upper secondary school English course. Firstly, 60 % of the respondents agreed, 24 % neither agreed nor disagreed, and 16 % disagreed with the general statement "I learned many new words during the second obligatory English course" (item 1). Thus, most of the students could say that they had improved their vocabulary, and especially this was the case with girls because 100 % of the female respondents agreed. However, according to the respondents, *Vocabulary.com* had not contributed to the students' vocabulary development much (item 5): 64 % said they would have learned the same number of words during the course also without *Vocabulary.com*, 32 % did not know whether it had any effect or not (or were not motivated to think about it), and only 4 % said they would not have learned as many new words without this platform. Hence, only one student, and this was a male student, basically said that the platform was more than useful. Figure 16 below shows the proportions among male and female students in percentages.
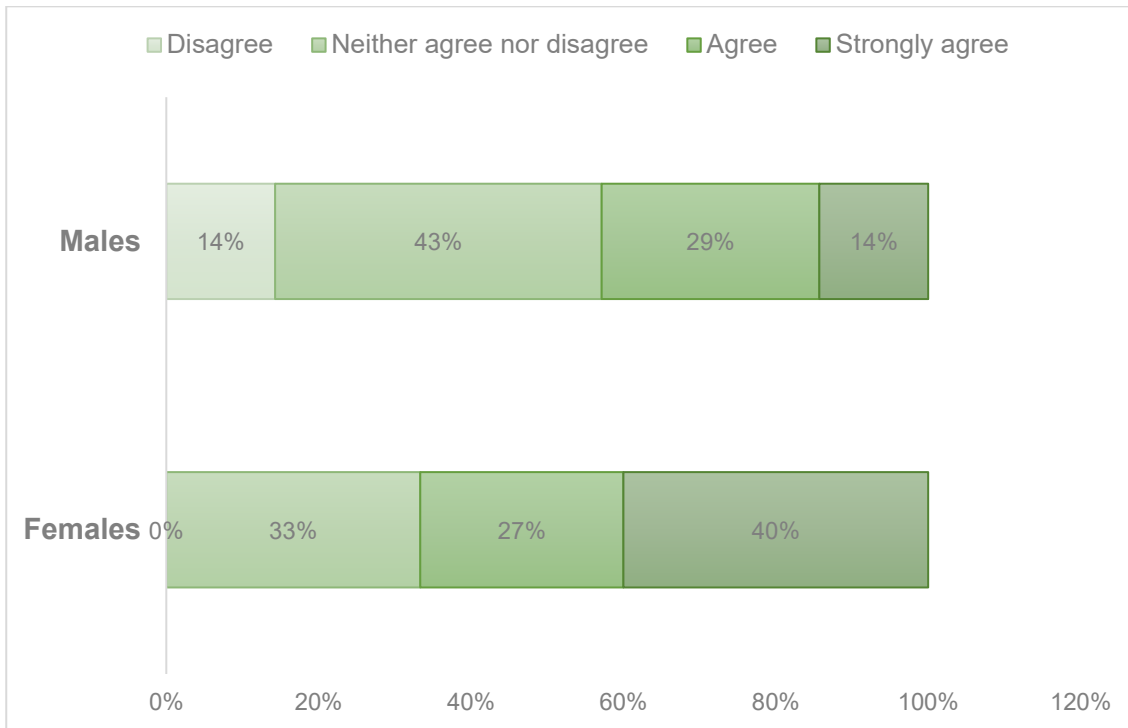
Figure 16. The impact of *Vocabulary.com* on the students' vocabulary development, where agree means that the platform did not have an effect (item 5).

The fourth research question aimed at explaining what *Vocabulary.com* is like compared to *Quizlet* in general and in the opinion of the students. Only one statement (item 10) in Questionnaire 2 was dedicated to the comparison of *Vocabulary.com* and *Quizlet*. However, in the open-ended questions section of the survey, the students could elaborate on their experiences with *Vocabulary.com* and *Quizlet*, or other vocabulary learning games they were familiar with. Based on the responses to item 10, it is clear that after having tested *Vocabulary.com* during one English course, most of the subjects still preferred *Quizlet* to *Vocabulary.com* as a tool to help them study new words. Of all the respondents, 56 % agreed strongly, 16 % agreed, 16 % neither agreed nor disagreed, and 12 % disagreed on the superiority of *Quizlet*. Nevertheless, these results show that the students were not totally unanimous in their judgements, and there were actually a few students (male and female alike) who did not think that *Quizlet* is better, but once again the difference was great between male and female students. While 87 % of the girls agreed on the superiority of *Quizlet*, only 43 % of the boys said the same. The responses to another statement (item 4) discussed above revealed that all the male students had liked testing a new vocabulary game whereas among female students there were differing opinions, so it was not a surprise that

boys were more positive when they compared *Vocabulary.com* with *Quizlet*. It seems that girls are more prone to use the safe and familiar apps that they have found to be useful whereas boys are more open to new ones. Before proceeding to the results obtained by the open-ended questions, Table 1 below summarises the students' attitudes towards *Vocabulary.com* and what has been explained above concerning the reception of *Vocabulary.com* among first-year upper secondary school students, and also shows that the ease of use received the most positive ratings.

Table 1. The subjects' attitudes towards *Vocabulary.com*.

	1 Strongly disagree	2 Disagree	3 Neither agree nor disagree	4 Agree	5 Strongly agree	Mean
Motivating	36 %	24 %	32 %	8 %		2.1
Useful	16 %	24 %	28 %	32 %		2.8
Enriching	12 %	24 %	40 %	20 %	4 %	2.8
Easy to use	12 %	12 %	24 %	44 %	8 %	3.2
Difficult language	12 %	36 %	40 %	4 %	8 %	2.6

5.1.4 Open-ended questions of Questionnaire 2

Many students, especially girls, had taken the trouble to describe their experience of *Vocabulary.com* and also write their own suggestions for what a useful and fun vocabulary learning game could be like. In Questionnaire 2, question 13 asked for the students' comments on the games and the dictionary of *Vocabulary.com*, and what it is like compared to other digital vocabulary learning games they use (such as *Duolingo, WordDive, Quizlet*). Saying simply that *Quizlet* is better than *Vocabulary.com* was found in half of the responses. The reasons given (although not everybody gave any) were the following: *Quizlet* is easy to use, the meanings of words are given in Finnish, and there are different kinds of games. The following translated quotes serve as examples of the students' comments:

(1) I didn't use Vocabulary.com except on a few lessons. I also didn't understand how it is used. Quizlet is easy to use, and I use it every time I learn new words or concepts.

(2) I like Quizlet more because there are different kinds of games. Translations were in Finnish, which helped me to translate words. Vocabulary[.com] told what the words mean, not how they are supposed to be translated.

It is interesting that the respondents underlined the need for a translation because in the vocabulary tests they were not asked to give the Finnish translations but to show they have understood the meaning of the words. One student also said that she thinks *Quizlet* is better because she is not used to using *Vocabulary.com*, and many respondents said that it is easier. On the contrary, a recurring theme related to *Vocabulary.com* was that it is difficult, both to use as well as its monolingual content, but then, a positive feature mentioned by several respondents was the accumulating score in *Vocabulary.com* which is different from *Quizlet*. For example, the quotes below talk about these themes:

(3) Vocabulary.com games and dictionary brought nice variety to learning new words, but it was more difficult to use than e.g. Quizlet and otherwise, too, as it was monolingual and some of the words were too unfamiliar.

(4) quite a nice game and seeing the score was a nice thing. I like Quizlet more because I learn the words better when I can deal with them also in Finnish

While overall the open-ended questions revealed that many students had not much used *Vocabulary.com*, this was not the case with all the respondents as there were also a few students who said that *Vocabulary.com* is nice or they had liked it more than *Quizlet*. In addition, one respondent, who said she had not played the game, thought, however, that the dictionary of *Vocabulary.com* is good. The comments below were made by male respondents:

(5) I liked Vocabulary[.com] it was a very good addition because one could get points from correct answers.

(6) Vocabulary[.com] is better and easier to use than Quizlet. The explanations of words were good and one could easily understand them.

The other open-ended question of Questionnaire 2 asked that if the respondent could plan their own vocabulary learning game, what it would be like. Combining all the responses, an ideal vocabulary game should be bilingual, easy to use, versatile with different games and tasks, and rich in visual elements, such as colours and pictures. For example, one student described an ideal vocabulary learning game in the following way:

(7) There would be a lot of pictures and colours and in the game both monolingual and bilingual learning would be possible.

In an educational game, the students also wanted to have clear instructions and a flashcard feature, and in addition, the player should be able to see his or her progress clearly and play the game with their mobile phone (have a mobile app). Based on these responses, which clearly show that different students expect different kinds of elements from educational games, it is not an easy task to design one game that would suit the tastes of everyone, and thus, it would be probably best that various vocabulary games are developed, especially task-based adventure games, and made available to schools. Personally, as a teacher, I would like to see more games like the popular Finnish *Ekapeli*, that is a very effective and fun educational game teaching young children to read. A somewhat similar game could well be developed for learning English vocabulary, and I think this is a very current issue now that it has been decided that English teaching will start on the first grade in Finnish elementary schools from 2020 onwards.

5.2. Observations

During the intervention period, or the English course that lasted approximately two months, observations were made concerning the use of *Vocabulary.com* in the classroom, student activity between the classes, and the use of the platform from the teacher's perspective. The notes that were made, the information provided by the Educator Edition, and vocabulary test results will be examined in the following subsections, and this analysis will be followed by a discussion of all findings.

5.2.1 *Vocabulary.com* in the classroom

Vocabulary.com was introduced to the students in the first lesson of the course. On the screen, they were quickly shown the Vocabulary.com website, the dictionary and The Challenge, and how to use it. However, being a totally new platform for all the students, more time should probably have been devoted to explaining the different features of the platform at the beginning of the course because one student commented in Questionnaire 2 that she did not use *Vocabulary.com*

at all because it was difficult, and she was not taught how to use it. After the introduction, the participants were given a class invitation handout that included the instructions on how to join the class that had been created with Educator Edition. Out of 30 students 26 joined the class, but later on during the course, after the four missing students had been sent a reminder and a new class invitation handout via e-mail, a couple of more students joined, so altogether 28 students participated in testing the platform. Since the students had their laptops with them on every lesson, they were told at the beginning of the course that they can play The Challenge whenever they have extra time on the lessons, for example after doing the required exercises, so that the quicker and more advanced students would not have to get bored and frustrated. It was noted that sometimes this also happened, although usually there was no time left for this.

After the students' first encounter with *Vocabulary.com*, they were occasionally reminded about using it, but it was not regularly used in the classroom. Assignments created with Educator Edition were quite often mentioned as part of their homework, but as with all homework in upper secondary school, not nearly everybody even started doing these assignments, which were not evaluated, and thus, did not directly affect their grades. The assignments will be discussed in further detail in the next subsection. However, *Vocabulary.com* was used also in the classroom a few times. At the end of the lesson preceding the first vocabulary test, Vocabulary Jam (co-operative gameplay) was played in the classroom, testing 20 different words with 20 questions. All 24 students who were present that day took part in the game. During the gameplay, a few male students were heard to say that they just quickly select one of the options of the multiple-choice questions because they do not have time or energy to read the questions properly. In game speed options, the slowest possible time limit had been selected, but it appears that the option "no time limit", which allows the teacher to give as much time as needed for the students to answer the questions, would be the best option in an EFL setting. Before playing for the first time, there should have also been more time for explaining how the game works and perhaps less questions on the first time. In addition, just a moment before the first vocabulary test, a male student who had used *Vocabulary.com* to revise the words for the test, told the teacher in Finnish that "[The Challenge] is entertaining and absorbing, and it is good, that with it one learns to explain words in English, but

from the point of view of revising for a vocabulary test, it was unhelpful that the game tests one's knowledge on the different meanings, like in the case of *principal*". This was a very insightful and honest comment, which indicates that with The Challenge entering the state of flow is possible, but that it is not optimal for trying to learn only some meanings of words.

At the beginning of the lesson prior to the third and last vocabulary test, the students were given 10 minutes to individually practise for the test by playing the games of *Vocabulary.com*. The only problem the students seemed to have was that they did not have their headphones with them (although they should have had), and hence, they could not listen to the pronunciation of words without disturbing others (or feeling anxious) and playing Spelling Bee was virtually impossible. In fact, in the responses for Questionnaire 2 (question 13), one student also commented on this problem saying that the listening tasks were problematic because one would have to use headphones. In addition, when the students were individually practising for the word test, one female student showed that she had found a very practical solution for the problem that *Vocabulary.com* does not include Finnish translations: she used a bilingual dictionary (*Sanakirja.org*) to help her answer the questions in The Challenge and to learn how they should be translated. Between the two vocabulary revision lessons, the students wrote an essay in the classroom, and they were only allowed to use monolingual dictionaries, one of the suggested dictionaries being *Vocabulary.com*. The students were sitting in groups, and each group had one laptop for using online dictionaries to look up words. Approximately half of the groups decided to use *Vocabulary.com* while others used either *Oxford Learner's Dictionary* or *Collins English Dictionary*.

5.2.2 Student activity between classes

Through Educator Edition, it was possible to keep track of the overall student activity on *Vocabulary.com*. It was easy to see which students had played the game and how often, and whether they had completed the assignments given to them, although it was not possible to observe their use of the dictionary between the classes. The first assignment that was given to the students on *Vocabulary.com* was to practise the vocabulary of the first text in the textbook with The

Challenge. Two vocabulary lists were created on *Vocabulary.com*: one with all the words from the vocabulary list of the textbook, and one with its keywords that were in bold type in the textbook. The Vocabulary Jam mentioned above was created based on the latter list. The second assignment was created based on the vocabulary of the second text studied on the course, which was not tested with a word test, but only one student did this assignment, so the word tests really seem to motivate students to practise the words. The third assignment was given a few days before the second word test, and it was not mentioned in class, so only a few students had noticed it and none of them answered but a few questions. Several assignments were then given before the last word test, and as mentioned earlier the students could do them in class as well, and hence, many students used *Vocabulary*.com that day, but only a few male students completed an assignment. There were altogether eight different assignments on *Vocabulary.com* during the course, that were based on six different vocabulary lists created by the teacher from five of the vocabulary lists of the textbook. These assignments included Practise (playing the basic version of the game), Spelling Bee (one assignment), and Quiz (one assignment). Only a few students completed these assignments, and thus, it was concluded that the vocabulary lists could have been shorter making the completion of these assignments easier, but then again there could have been more assignments, for example two per week. The regularity of the assignments could have also helped the students to remember to use *Vocabulary.com*, and the teacher could have taken up the use of this platform more often in the classroom, since it seems that every time it was talked about in the classroom, the students played the game more.

Although boys were more positive about *Vocabulary.com* in their questionnaire answers, the student activity report in Educator Edition shows that actually four of the five students who had answered most questions (and achieved most points) in The Challenge were girls, although the only male student among these five class leaders had answered most questions (cf. Table 2). As we can see in Table 2, points are not achieved based on the number of questions answered but on the performance. Half way through the course there were six students who had answered more than 100 questions and half of them were boys, and overall, the students were most active during the first three weeks of the course (cf. Fig. 17). The bar chart below shows the student activity, and

how many questions were answered correctly (green) and how many were not (red) in the games

of *Vocabulary.com*.

Table 2. The class leaders' overall points and the number of questions answered at the end of the intervention period.

Participant ID	Points overall	Questions answered
Female 1	84,455	451
Male 1	69,340	688
Female 2	17,905	303
Female 3	17,300	205
Female 4	16,675	437

Figure 17. Summary of student activity overall and by day during the intervention period.

5.2.3 *Vocabulary.com* from the teacher's perspective

The Educator Edition of *Vocabulary.com* is fairly easy to use, and on the Vocabulary.com website,

there are helpful articles and videos to better understand how it works. The basic teacher view was

easy to check every once in a while to see which students had been playing the games and which

were their trouble words, but with many students or many courses that need planning, it might be

too much to try to keep track of every student's progress, at least for a novice teacher. However, a

clear advantage of Educator Edition as compared to traditional teaching methods is that the

teacher can, for example, use it as a tool in evaluation, as the information on student activity can

be found on Educator Edition for a long time even after the class has ended. In the present study, *Vocabulary.com* was not used as an evaluation tool in giving course grades to the students, but the students' success in vocabulary tests was contrasted with their use of *Vocabulary.com* to see whether it had a positive influence on their learning outcomes. According to the participants of this study, almost everybody would have learned the same number of English words during the course also without *Vocabulary.com*. The same observation was made by looking at the students' vocabulary test results. The students who had played The Challenge the most (Female 1 and Female 2 in Table 2), did excellently in the tests, but they would have probably done well anyway and there were also others who did very well, and Female 4 (Table 2) did not get good results despite having played the game towards the end of the course. However, as most of the students only played the game very little, there is no material to make any real conclusions based on the vocabulary test results. If all the students had used *Vocabulary.com* on a regular basis, it is almost certain that, in the long run, it would have affected their learning outcomes, but it might be that one English course is never long enough to bring forward such positive effects.

The most complicated part of *Vocabulary.com*, for a beginner, was making the vocabulary lists based on the lists found in the textbook. As I made my own vocabulary lists for the students, I wrote down any problems that I encountered, and based on these notes, I will explain some of the issues in this section and also give tips to other teachers for using *Vocabulary.com* in the last subsection of the next chapter. Firstly, *Vocabulary.com* cannot teach through The Challenge all the words that are found in the vocabulary lists of English textbooks, and while not all words of the dictionary cannot be played, some of the words in Insights 2 textbook vocabulary lists were not found even in the dictionary. As *Vocabulary.com* is designed to help in improving academic vocabulary, it does not include many easier words that are, nevertheless, new to B2-level EFL students. Secondly, partly due to this problem, the making of vocabulary lists on *Vocabulary.com* first took a long time, but after making some lists it was possible to make a longer list of 60 words in one hour. However, as mentioned above, such long lists are maybe not ideal from the students' perspective, as assignments based on long lists take such a long time to complete and may, thus, be found demotivating. Thirdly, unlike in *Quizlet*, there are basically no ready-made vocabulary lists

for chapters of English textbooks used in Finland (only a few by one Finnish user in addition to the ones that were published during this study), as the platform is not so well-known. However, *Vocabulary.com* has a large number of ready-made vocabulary lists for teaching English literature.

6. DISCUSSION

This chapter further discusses and interprets the results presented in the previous chapter, and it is structured in a way that the five research questions are addressed one by one in the order they were listed at the beginning of this thesis. While the questionnaires fulfilled their purpose and provided answers to the research questions of this study, I am not totally content with their layout. However, doing this study has been an important learning experience, and if pen-and-paper questionnaires with Likert items needed to be compiled, it would be wiser to make the questions look more like typical Likert items (arranging responses horizontally and using consecutive numbers instead of letters) or use an online survey creator, and at least for younger respondents adding emojis would certainly be a good idea.

6.1. Student attitudes

First of all, the aim of this thesis was to find out how digital vocabulary learning games and especially how the monolingual game-based vocabulary learning platform *Vocabulary.com* is received among Finnish upper secondary school students who learn English as a foreign language. Thus, besides vocabulary learning games in general, the focus of this study was on those digital games that are monolingual or that do not employ Finnish, which was the first language of most of the subjects, as well as on the impact of the lack of Finnish on students' motivation. My hypothesis was that the monolingual interface and content would probably not have a negative impact because many upper secondary school students are used to playing English-language games in their free time—unless games designed for the purpose of learning are seen differently from other types of games. The results of this study support this initial hypothesis to some extent because only 24 % of the respondents said that *Vocabulary.com* was not easy to use

because it is monolingual, and not more than 12 % of the first-year students (who were all females) considered the English-only content to be difficult. However, when the respondents compared *Vocabulary.com* with other vocabulary games they use in their comments, there were more students who said it was difficult or challenging because it did not employ Finnish language. Thus, there is some inconsistency between the students' responses to the difficulty of *Vocabulary.com* in the statement section and their responses to open-ended questions. As 40 % of the respondents had neutral or no opinion on the matter, it is possible that without the midpoint alternative of the Likert scale, there would have been more agreeing responses.

The great majority of the surveyed students, males and females alike, thought that digital vocabulary learning games in general are useful, but second-year students had slightly more positive attitudes than first-year students. Generally, the answers of second-year students also indicated that they were more experienced with vocabulary games. However, the gender differences in attitudes towards playing video games and/or online/mobile games as a free time activity were noticeable, and thus, this study supports the findings of previous studies which stated that boys like video games more than girls while girls like educational games more than boys. Nevertheless, neither female nor male students in the two sets of respondents thought that playing English-language entertainment games feels difficult as altogether only 6 % of the first- and second-year students (6 % of the males and 6 % of the females) considered them difficult. The respondents who considered English-language entertainment games difficult were all first-year students and from the first-year students 12 % said that playing games in English is difficult. Several first-year students also voted for bilingual games in their comments on an ideal vocabulary game, so it would have been interesting to hear the opinions of the second-year students on the matter, too. As 12 % of the first-year subjects also stated after the course that the English-language content of *Vocabulary.com* felt difficult, it appears that educational games are not seen differently from entertainment games when language is considered.

The students in both sets were open to monolingual vocabulary games, but less so to monolingual dictionaries. However, in both cases, first-year students were more open than second-year students, and hence, this study suggests that the first year of upper secondary school is a

good time to introduce students to new vocabulary learning tools, especially monolingual ones. A significant strength of *Vocabulary.com* is that it combines a game with a dictionary, and in this way, students can be familiarised with monolingual dictionaries through gaming which is usually preferred over learning words from a dictionary. However, while students should be directed to use monolingual vocabulary learning resources even more than is usually done, bilingual dictionaries still have an unchallenged position among EFL learners. The three most popular dictionary tools among the respondents were *Sanakirja.org*, *Google Translate*, and English textbooks, and I believe these results are widely representative of the dictionary use of Finnish upper secondary school students in general. The results also indicate that basically all upper secondary school students only use online dictionaries, but this is not a surprising finding as we are talking about digital natives. Levy and Steel (2015, 186) talked about "a fluidity around what the name 'dictionary' actually entails" (Chapter 3), and on one hand, referring to *Google Translate* as a dictionary shows some fluidity, but on the other hand, the students' comments revealed that they still hold very traditional ideas on what can be classified as a dictionary.

The students' responses to the open-ended questions of Questionnaire 1 demonstrated that playing vocabulary games is the most preferred way of learning new vocabulary among upper secondary school students. *Quizlet* was mentioned most often while *WordDive* and video games were referred to by some students. While it is likely to be true that games are the most preferred method of vocabulary learning, one could doubt that the results are distorted. Did the students say this because they knew that the study was about vocabulary learning games, and they had just answered several questions related to games? This is of course a possibility that cannot be ruled out. Other ways of learning words that emerged from the responses and were mentioned by at least five students were learning from English textbooks, watching TV and films, browsing or looking up words in dictionaries, and reading and writing down words. However, only female respondents mentioned TV and films. This and the gender differences reported above suggest that the preferred form of entertainment, and therefore an important source of English input, for adolescent boys is video games whereas for adolescent girls it is TV series and films. These (gender-related) differences should be considered by teachers who want to encourage their

students' vocabulary development and improve students' learning experiences in digital learning environments.

Vocabulary.com as a new vocabulary learning tool was received quite well among first-year upper secondary school students as the majority of all participants and all of the male students said they had greatly liked testing a new vocabulary game. This finding indicates that incorporating games into language teaching and learning is a welcome change particularly for boys. However, the platform was not perceived useful by as many students, but boys rated it clearly more useful than girls. Similarly, boys deemed Vocabulary.com easier to use than girls, although in this case the difference was not as evident. As the perceived usefulness, which is affected specifically by the perceived ease of use, is the most important factor affecting the acceptance and use of a new technology according to TAM, it can be said with quite a high degree of certainty that Vocabulary.com would generally have a better reception among male students of Finnish upper secondary schools. One explanation for this could be that the game is not task-based, and another could be that it does not include a narrative that would appeal especially to girls. In previous literature it was concluded that competition and complex game environments are the components needed for boys to enter a state of flow, while narratives usually help girls to experience flow. In this study, one student, a male student, described Vocabulary.com as 'absorbing', which refers to an immersive gaming experience. Nevertheless, although boys said they found Vocabulary.com useful, it did not seem to have a great impact on their behavioural intentions, as four of the five class leaders were girls, but this could also be seen as an indication of these female students being more conscientious. On Vocabulary.com, no interaction and very little collaboration between players are required either, but these elements could greatly improve both male and female users' gaming experiences. As mentioned in Chapter 2, Kapp (2012, 33–35) emphasized the creative combination of different game elements in the best games, and as the lukewarm reception of Vocabulary.com, or that it was not deemed very useful, cannot be explained but partly with the fact that it is monolingual and the fact that it is not exactly designed for EFL students, the missing game elements could be used as an explanation. The element of fun was also emphasized in previous literature on game-based learning, and it seems to be missing from Vocabulary.com to a large

extent. However, most of the subjects gave their opinions about the platform with very little experience. Therefore, it seems to be crucial that students get off to a good start with this or any other platform and get the impression that using the platform is meaningful and improves their academic success, which means that the active role of the teacher in integrating this kind of educational games and gamified environments into teaching cannot be stressed too much.

The questionnaires, that were used to come to these conclusions, also had weaknesses that may have affected the results to some extent. The Likert items were formed so that they would not persuade the respondents to answer in a certain way, meaning that there were both positively and negatively phrased statements, but in the attempt to avoid persuading the students to respond too positively, the phrasing of the statements might have actually been too negative—at least in Questionnaire 2. In addition, in Questionnaire 1 the statement "I like digital vocabulary learning games that employ Finnish language the most" (item 5) may not have been clear enough as in both groups around half of the students selected the option "neither agree nor disagree" (ENA2: 57 %; ENA6: 41 %). Thus, this item was not taken up in the analysis of results. Also, the statement "I would be willing to use a digital game that is in English only to learn new vocabulary" (item 6) could have been understood, due to phrasing, not just denoting educational games that are monolingual, but also as referring to any kind of monolingual digital games that enhance vocabulary development.

6.2. Student motivation

Dörnyei among many others has underlined the importance of motivating students, and this thesis also aspired to uncover the impact of educational games on students' motivation to improve their vocabulary and whether *Vocabulary.com* increases the students' motivation towards learning new words. As half of the respondents had very positive attitudes towards studying vocabulary, and only a few respondents had a negative attitude, it seems that students know how important it is to have a rich vocabulary and that their motivation for learning new words was initially very high. Thus, it was expected that no dramatic improvements could be seen in the subjects' motivation during the intervention period. However, despite the negatively phrased statement that measured the positive

impact of vocabulary learning games on students' motivation, the connection between educational games and increased motivation was clear, especially among second-year students. While in this statement it was not specifically mentioned that it concerns the respondents' ideas on digital games, after having read several statements related to digital vocabulary games, it is very likely that those were the games that the respondents had in mind when they gave their responses. Among the first-year students more than one third selected the midpoint alternative of the rating scale, while only 5 % of the second-year students had done the same. Thus, the results suggest that second-year students are more familiar with vocabulary games than first-year students and have noticed their positive influence on their motivation as a result of having used them more whereas the first-year students' attitudes are more undecided—possibly because of their inexperience. Male and female students alike reported that educational games affect their motivation, and no significant differences between boys and girls concerning the motivating influence of competition in games was detected either. Almost half of the students in both sets of respondents said that competition motivates them. Hence, based on this study it cannot be said that among upper secondary school students competition would motivate males more than females, and while it could be claimed that these results do not support earlier findings on differences between boys and girls, the results could actually say more about the personality type of upper secondary school students. The students of upper secondary schools are usually more ambitious than the average Finnish adolescent.

The impact of the use of *Vocabulary.com* on upper secondary school students' motivation for learning new vocabulary reflects the students' attitudes towards the platform. One third of the male students said it affected their motivation while none of the female students had noticed any difference. As explained in Chapter 2, talking about intrinsic motivation, Deci and Ryan (1985, 245) said that "[w]hen the educational environment provides optimal challenges, rich sources of stimulation, and a context of autonomy, this motivational wellspring of learning is likely to flourish". Basically, *Vocabulary.com* offers all these: optimal challenge is ensured with adaptive technology, the platform offers a variety of ways to practise vocabulary, and at least theoretically students can independently choose what they want to study and when. Nevertheless, as a couple of female

students mentioned in their comments on what *Vocabulary.com* is like compared to other vocabulary games, the questions in the game include many difficult words, and sometimes even when one knows the meaning of the word that is asked for in the question, the multiple-choice options are too unfamiliar to choose from. Therefore, it cannot be said that the challenge is always optimal even for a very advanced EFL student. Since the experience of flow was emphasized in the literature because of its positive influence on intrinsic motivation, and the first and foremost component of a flow experience, according to Csikszenmihalyi (1991, 49), was "a challenging task that is achievable", it is possible that the participants felt as if the tasks in the game were too challenging and unattainable for the game to be motivating for most of the subjects. In addition, the subjects could have been given shorter assignments and encouraged to find ready-made vocabulary lists that they find interesting to practise with The Challenge to increase their self-confidence and autonomy, and hence, intrinsic motivation. However, as many students were very motivated to improve their vocabulary even before they had tested *Vocabulary.com*, it is not a surprise that it did not increase their motivation greatly.

Although playful competition is an important game element that often motivates players and facilitates engagement, based on the results of the surveys, it appears that competition and the rewards (points) in The Challenge did not engage the participants very effectively, or their positive effect on motivation was overridden by other factors. At the beginning of the course, 44 % of the first-year female students and 55 % of the male students said that the element of competition in games motivates them to study English words, but only 13 % of the females and 28 % of the males had found the points achieved on *Vocabulary.com* motivating. Nevertheless, in their comments, several students mentioned the accumulating score as a positive feature when compared to other vocabulary games. Thus, it seems as if the points and the leaderboard of *Vocabulary.com* were not enough to create real competition, or then the respondents had not played the game enough to be fully engaged in the competition. Even if there were some students who played The Challenge more, real competition between the class mates would have probably required that the whole class enthusiastically takes part in it, and this did not happen during the intervention period. One reason for this could be that the game was perceived too challenging despite the students' unwillingness

to admit it. According to the statement section of Questionnaire 2, only 12 % of the respondents had found it difficult to understand the explanations in the dictionary of *Vocabulary.com* and/or the questions in the game and 40 % were neutral or did not know what to think of them, so almost half of the students did not find them difficult. None of the boys agreed on the difficulty and the great majority disagreed, but in the responses of the girls there was more variation and more than half of them neither agreed nor disagreed. If there had not been this midpoint option, or "face-saving don't know" alternative as Sturgis et al. (2014) put it, it is likely that a greater proportion of respondents had agreed on the difficulty because it was a theme that clearly emerged from their responses to the open-ended questions. In addition, the differences between the responses of male and female students could possibly indicate that the girls were more self-critical and self-aware when they gave their answers, because based on the teacher's observations during the classes and Educator Edition's reports on student performance, the males might actually have had more difficulties in understanding the monolingual content of *Vocabulary.com* than their survey responses suggest. However, this does not mean that there would not have been any other system-internal weaknesses that hindered the motivating effect of *Vocabulary.com*. For example, while *Vocabulary.com* provides challenge and evokes the learner's curiosity, the third motivational component of Malone's model, fantasy, is not present at all in the game. Thus, it could be that for a serious game, The Challenge is maybe too serious.

6.3. Vocabulary learning outcomes

In addition to Finnish upper secondary school students' attitudes towards digital vocabulary games and their effect on the students' motivation, this thesis set out to investigate whether *Vocabulary.com* has any positive effect on the students' learning outcomes during one English course. Most of the first-year students who participated in this study could at the end of the course say that they had improved their vocabulary, and especially this was the case with girls because 100 % of the female respondents reported improvement. However, although there was one student who was quite sure that without *Vocabulary.com* he would not have learned as many new words, the platform did not contribute much to the students' vocabulary development during one upper

secondary school course neither according to their subjective estimates nor according to the vocabulary tests. However, it should be remembered that the vocabulary tests used on the course were normal word tests, and they do not measure vocabulary knowledge very accurately, as they focus on testing receptive vocabulary, which is only the beginning of mastering a word. *Vocabulary.com* aims at teaching the different meanings of a word in different contexts and taking the learner through the whole process of learning the word, but for a student who simply wants to get average points from the test, this means unnecessary work. The results reflect the students' subjective views, and it was well understood that if vocabulary learning outcomes were to be measured in an objective and reliable manner, there should be a pre-test and a post-test as well as a control group in addition to the experiment group.

There are naturally various reasons for why the students did not see *Vocabulary.com* affecting their learning outcomes. Firstly, an obvious reason is that the platform was not used much by most of the participants. The fact that the students had an unlimited access to *Vocabulary.com* surely had a positive effect on the vocabulary development of those who used the platform more, but having the mobile app would have made it even more accessible and probably benefited more students as their responses suggested. Secondly, engagement contributes significantly to learning, but the students were not engaged in the learning activities provided through the platform, although *Vocabulary.com* as a game-based digital learning environment theoretically has the potential to increase engagement. On one hand, the students should have been much more engaged and play The Challenge very often that it could have resulted in visible positive outcomes, but on the other hand, those students who played the game most, must have benefited from it even if they could have learned the words in other ways had there not been *Vocabulary.com*. Thirdly, as discussed in the previous subsections, the students' proficiency in English language may not have been adequate for playing The Challenge, and L2 proficiency was mentioned as one of the most important factors influencing vocabulary learning outcomes in the literature. Lastly, in previous studies, it was concluded that the game type has a significant impact on learning outcomes, and task-based games, which encourage engagement effectively, generally resulted in larger vocabulary gains than drill-and-practise games, such as *Vocabulary.com*.

6.4. *Vocabulary.com* vs. *Quizlet*

One of the minor goals of this study was to compare and contrast *Vocabulary.com* with *Quizlet*. The students who answered the questionnaires were very unanimous in their responses, and they undoubtedly appreciated *Quizlet* as a vocabulary learning tool. After having tested *Vocabulary.com* during one English course, most of the main subjects still preferred *Quizlet* to *Vocabulary.com* as a tool to help them study new words. However, boys did not show preference for *Quizlet* as strongly as girls, which is in line with the finding, that they were more enthusiastic about testing a new vocabulary game than girls. The reasons that according to the respondents make *Quizlet* better than *Vocabulary.com* were the following: it is easy to use, the meanings of words are given in Finnish, and there are different kinds of games. The students' answers to the open-ended questions of Questionnaire 2 suggest that Finnish upper secondary school students still expect traditional translation-based vocabulary teaching instead of the communicative approach because so many respondents said that *Vocabulary.com* does not help them to translate the words and emphasized that a good vocabulary game should be bilingual (teach the words' translations). On one hand, *Vocabulary.com* was perceived difficult when compared to *Quizlet*, although one student described it as challenging rather than difficult, but it is possible that the students would have found it less difficult, if it had been introduced to them more thoroughly by the teacher. On the other hand, the accumulating score on *Vocabulary.com* was mentioned as a positive feature that *Quizlet* does not have, and one student underlined that in an ideal educational game one can see his or her progress, which is made very easy for the user on *Vocabulary.com*.

6.5. Educator Edition and tips for teachers

Another minor goal of this thesis was to find out what it is like to use *Vocabulary.com* as a vocabulary learning tool from the teacher's perspective and also provide information about using Educator Edition to other (student) teachers. Using *Vocabulary.com* platform is free for individual users, but the Educator Edition of *Vocabulary.com* is not a free resource, and hence, this study is especially valuable for those teachers and schools who would like to gain more information on user

reactions to *Vocabulary.com* before purchase decisions. *Vocabulary.com* clearly has many advantages, but it also has its shortcomings. As a platform that has been designed for educational purposes, its use does not require enormous efforts from the teacher and could, thus, be quite easily adopted by busy teachers. However, as there are no ready-made vocabulary lists for texts of English textbooks used in Finland, a Finnish teacher has to take the trouble to create such lists by themselves, if they want to make good use of the platform in ordinary Finnish upper secondary schools. Yet, *Vocabulary.com* has innumerable vocabulary lists that are based on works of English literature, so in the Finnish upper secondary school context, *Vocabulary.com* is probably most useful for IB English teachers, but it could also well be used on the third obligatory English course in upper secondary schools that follow the Finnish National Curriculum, as the themes of this particular course revolve around media, culture, and literature (Opetushallitus 2015, 110). In addition, the platform could be recommended as more challenging learning material for advanced students on any course and they can also be encouraged to use a bilingual dictionary as a way to provide support (scaffolding). This would not even require a teacher account. With Educator Edition, however, *Vocabulary.com* could be used at least sometimes instead of regular vocabulary tests to demonstrate vocabulary skills, if completed assignments were required from all students, but this was not experimented in the present study. For users of Educator Edition, it is also wise to check the "Student View" after assigning the first list to understand what the platform looks like to the students.

Finally, here are some practical suggestions that may help in creating vocabulary lists on *Vocabulary.com* from the glossaries of English textbooks:

- As you start a new list, copy a text from the digital textbook and paste it into the text box, and let *Vocabulary.com* find the vocabulary words that are learnable, i.e. the words it can teach through The Challenge (by clicking "Next Step").

- Go through the whole list already at this point and leave out the irrelevant words (that are not included in the glossary of the textbook).

- In addition, before saving the list ("Learn These X Words"), check which of the (bolded) keywords are missing from the list and make a note of them, so you can be sure that at least

the most important words of the text will be found on the list. If, however, you think that the students will not read the words from the list but only play The Challenge, then you can assign the list right away and skip the following steps (but then you cannot test those words in a normal vocabulary test or the students must revise them from the textbook).

- After saving, go to "My lists" (which you can find by clicking the three horizontal lines next to your name, and under the heading "My Account").

- Select the list that you just created and open it again for editing.

- Add all the missing keywords to the list one by one, select the right definition for each one from the drop-down menu, and write an example sentence from the text (or copy it from another entry on the list, if two words are found in the same sentence).

- After this, go through the whole list once more and check that the definition under each word corresponds to the meaning in the context as well as possible, so that students who study the words by reading the list can understand what the words mean in the example sentence.

7. CONCLUSION

As stated at the beginning of the thesis, the overall motivation behind conducting this study was to improve English language teaching in Finnish upper secondary schools as well as students' learning experiences with digital language learning games or environments and online dictionaries. This thesis aimed at challenging the reader to rethink vocabulary teaching and learning, and how to make it more engaging and help the students become life-long learners of new words. This was done by reviewing some relevant literature and investigating upper secondary school students' attitudes towards game-based English language learning and a vocabulary learning platform called *Vocabulary.com.* The impact of educational games in general and that of *Vocabulary.com* on the students' motivation and vocabulary learning outcomes were also studied. Among the subjects of this study, educational games in general were deemed very useful and motivating—especially among the second-year upper secondary school students. Bilingual games and dictionaries were preferred by the students, but the subjects were also open to monolingual vocabulary games, whereas less so to monolingual dictionaries. First-year students were more open to both kinds of

new monolingual vocabulary learning tools, and therefore, it seems that the first year of upper secondary school is a good time to introduce new games and dictionaries to the students. However, the game of *Vocabulary.com* got a rather lukewarm reception among the first-year students, who considered it quite easy to use but not very useful or motivating. The English-language content was also found somewhat difficult by the students, and perhaps at least partly due to this, the use of *Vocabulary.com* did not result in significant positive learning outcomes during one obligatory English course. Nevertheless, the accumulating score and the dictionary of *Vocabulary.com* were seen in a positive light.

Although the initial focus of this study was not on gender differences but rather on the attitudes of students in general, great differences between male and female students emerged from the data—both in their attitudes towards gaming as a free time activity and towards *Vocabulary.com*. These results are in line with earlier findings (e.g., Inal & Cagiltay 2007; Hainey et al. 2013). It appears that integrating games into language teaching is welcome particularly for boys, and *Vocabulary.com* is very likely to have a better reception among male students than female students of upper secondary schools. On one hand, this study seems to support the idea that it is useful to develop language learning games that employ the Finnish language for the use of Finnish schools rather than think too optimistically about being able to use monolingual language learning games in typical classrooms where students have great differences in their English skills. On the other hand, advanced students may find more challenging monolingual games, such as *Vocabulary.com*, very motivating and useful. It is also possible that monolingual task-based games would be well received among Finnish EFL learners, as previous research (Tsai & Tsai 2018) shows that task-based games have a more positive impact on motivation and vocabulary learning outcomes than drill type games, such as *Vocabulary.com* and the most popular bilingual games used in Finnish schools. Thus, it is suggested that task-based bilingual games would be developed to enhance vocabulary learning in English classrooms and beyond. The developers of *Vocabulary.com* could also design another version of the game that is targeted at EFL learners by adding easier words and modifying the questions of the game.

In the Finnish context, *Vocabulary.com* would perhaps be most beneficial for university students, either for language students or students who study in the English-language programmes. Generally speaking, Finnish upper secondary school students still have huge gaps in their English vocabulary, and thus, they still need the support of their native language in learning new words. However, before rejecting *Vocabulary.com* in the Finnish upper secondary school context, it could be useful to carry out a small-scale study with an experiment group and a control group to test what learning outcomes could be gained if, for example, one group of students would practise 10 or 20 words with *Quizlet* and another with *Vocabulary.com*, and if both their receptive and productive word knowledge would be tested after that. It is possible that the students who had used *Vocabulary.com* instead of *Quizlet* would have improved more in their productive language skills. As such a clear difference between the first- and second-year students was reported concerning the impact of educational games on motivation, and as the second-year students have better English language skills than first-year students, it could be also interesting to test *Vocabulary.com* with them. Even considering their preference for bilingual games, using *Vocabulary.com* might have been more beneficial to the second-year students. In addition, more research is needed on the use of task-based language learning games in (Finnish) upper secondary schools.

As we can see from this study, now that the novelty value of educational games has worn off, the use of educational games does not automatically lead to increased motivation and better learning outcomes, although games were the most preferred way of learning vocabulary in the opinion of the participants of this study. However, the results could have been more positive had the teacher planned the use of *Vocabulary.com* during the course even more carefully and talked about it more in the classroom. Hence, this study strengthens earlier findings on the importance of the teacher's role in facilitating successful integration of digital learning environments into teaching as well as positive experiences for students in such environments. This study has also provided new information: it is locally valuable as it reports the attitudes of Finnish upper secondary school students towards game-based language learning, but the analysis of game elements of *Vocabulary.com* and its reception among EFL learners may also benefit a wider audience.

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APPENDICES

Appendix 1: Questionnaire 1

My name is Johanna Ketola and I'm a postgraduate student in the Faculty of Communication Sciences of Tampere University. This questionnaire is part of the teaching experiment of my pedagogical studies as well as my master's thesis. This questionnaire aims at surveying the Finnish upper secondary school students' attitudes towards English dictionaries and vocabulary apps and games. Your participation in this study is not obligatory but very warmly recommended.

Learning vocabulary through digital games

Please circle the alternative that best reflects your ideas.

Gender of the respondent: girl / boy / other

1. I think playing video games and/or online/mobile games is a nice way to spend free time.

    a. Strongly disagree

    b. Disagree

    c. Neither agree nor disagree

    d. Agree

    e. Strongly agree

2. For me, playing English-language entertainment games feels difficult.

    a. Strongly disagree

    b. Disagree

    c. Neither agree nor disagree

    d. Agree

    e. Strongly agree

3. Digital vocabulary learning games (e.g., Duolingo, WordDive, Quizlet, and vocabulary games by Otava) are useful when learning new English words.

    a. Strongly disagree

    b. Disagree

c. Neither agree nor disagree

d. Agree

e. Strongly agree

4. Digital learning games do not bring additional value to language learning.

a. Strongly disagree

b. Disagree

c. Neither agree nor disagree

d. Agree

e. Strongly agree

5. I like digital vocabulary learning games that employ Einnish language the most.

a. Strongly disagree

b. Disagree

c. Neither agree nor disagree

d. Agree

e. Strongly agree

6. I would be willing to use a digital game that is in English only to learn new vocabulary.

a. Strongly disagree

b. Disagree

c. Neither agree nor disagree

d. Agree

e. Strongly agree

7. I like to use Quizlet when I'm learning new English words.

a. Strongly disagree

b. Disagree

c. Neither agree nor disagree

d. Agree

e. Strongly agree

8. I think learning new English words is fun.

a. Strongly disagree

        b. Disagree

        c. Neither agree nor disagree

        d. Agree

        e. Strongly agree

9. Vocabulary learning games do not affect my motivation to learn new words.

        a. Strongly disagree

        b. Disagree

        c. Neither agree nor disagree

        d. Agree

        e. Strongly agree

10. The element of competition in games motivates me to study English words.

        a. Strongly disagree

        b. Disagree

        c. Neither agree nor disagree

        d. Agree

        e. Strongly agree

11. I like to use monolingual (English-English) (online) dictionaries or dictionary applications to learn new English words.

        a. Strongly disagree

        b. Disagree

        c. Neither agree nor disagree

        d. Agree

        e. Strongly agree

12. I prefer to use bilingual (Finnish-English) dictionaries in studying English.

        a. Strongly disagree

        b. Disagree

        c. Neither agree nor disagree

        d. Agree

        e. Strongly agree

Please write your answers to the following questions in the space provided with neat and clear handwriting.

13.   How do you prefer to study new English words?

_____

_____

_____

_____

_____

14.   Which digital games or apps have you made use of when learning English words?

_____

_____

_____

_____

15.   Which English dictionaries do you normally use?

_____

_____

_____

_____

Appendix 2: Summary of answers to Questionnaire 1

Likert items	First-year students (n=28)					Second-year students (n=22)				
	Strongly disagree	Disagree	Neither agree nor didagree	Agree	Strongly agree	Strongly disagree	Disagree	Neither agree nor didagree	Agree	Strongly agree
1. I think playing video games and/or online/mobile games is a nice way to spend free time.	4	6	5	10	2	1	5	2	11	2
2. For me, playing English-language entertainment games feels difficult.	11	9	5	1	2	9	10	3		
3. Digital vocabulary learning games (e.g., Duolingo, WordDive, Quizlet, and vocabulary games by Otava) are useful when learning new English words.			4	15	9			1	10	11
4. Digital learning games do not bring added value to language learning.	2	12	11	3		4	11	6		1
5. I like digital vocabulary learning games that employ Einnish language the most.	2	5	16	4			5	9	7	1
6. I would be willing to use a digital game that is in English only to learn new vocabulary	2	4	5	13	4	1	6	5	9	1
7. I like to use Quizlet when I'm learning new English words.		1	3	12	12		1		6	15
8. I think learning new English words is fun.	2	2	12	10	2		1	8	10	3
9. Vocabulary learning games do not affect my motivation to learn new words.		9	11	8		2	15	1	3	1
10. The element of competition in games motivates me to study English words.	3	3	9	11	2		5	7	9	1
11. I like to use monolingual (English-English) (online) dictionaries or dictionary applications to learn new English words.	1	8	14	5		2	13	6	1	
12. I prefer to use bilingual (Finnish-English) dictionaries in studying English.			6	18	4	1		2	12	7

Appendix 3: Questionnaire 2

As the survey I conducted at the beginning of the course, this questionnaire is also part of the teaching experiment of my pedagogical studies and my master's thesis in English language. The questionnaire aims at finding out how the students that participated in the teaching experiment felt about using *Vocabulary.com* during the course. Your participation in this study is not obligatory but very warmly recommended.

Learning vocabulary with the help of *Vocabulary.com*

Please circle the alternative that best reflects your ideas.

Gender of the respondent: girl / boy / I don't want to say

1. I learned many new words during the second obligatory English course.

    a. Strongly disagree

    b. Disagree

    c. Neither agree nor disagree

    d. Agree

    e. Strongly agree

2. *Vocabulary.com* did not affect my motivation to learn new vocabulary.

    a. Strongly disagree

    b. Disagree

    c. Neither agree nor disagree

    d. Agree

    e. Strongly agree

3. The points achieved in the games of *Vocabulary.com* motivated me to practise English words.

    a. Strongly disagree

    b. Disagree

    c. Neither agree nor disagree

    d. Agree

    e. Strongly agree

4. I liked testing a new vocabulary game a lot.

   a. Strongly disagree

   b. Disagree

   c. Neither agree nor disagree

   d. Agree

   e. Strongly agree

5. I would have learned the same number of words during the course also without *Vocabulary.com*.

   a. Strongly disagree

   b. Disagree

   c. Neither agree nor disagree

   d. Agree

   e. Strongly agree

6. *Vocabulary.com* was useful in learning new English words and preparing for the word tests.

   a. Strongly disagree

   b. Disagree

   c. Neither agree nor disagree

   d. Agree

   e. Strongly agree

7. *Vocabulary.com* (e.g. Vocabulary Jam) did not add value to the English classes.

   a. Strongly disagree

   b. Disagree

   c. Neither agree nor disagree

   d. Agree

   e. Strongly agree

8. *Vocabulary.com* was easy to use even though it was in English only.

   a. Strongly disagree

   b. Disagree

   c. Neither agree nor disagree

   d. Agree

e. Strongly agree

9. I found it difficult to understand the explanations in the dictionary of *Vocabulary.com* and/or the questions in the game.

    a. Strongly disagree

    b. Disagree

    c. Neither agree nor disagree

    d. Agree

    e. Strongly agree

10. I prefer Quizlet in learning English words.

    a. Strongly disagree

    b. Disagree

    c. Neither agree nor disagree

    d. Agree

    e. Strongly agree

11. I would have used the game and/or the dictionary of *Vocabulary.com* more if I had had the Vocabulary.com mobile app on my phone.

    a. Strongly disagree

    b. Disagree

    c. Neither agree nor disagree

    d. Agree

    e. Strongly agree

12. I like to use monolingual (English-English) (online) dictionaries or dictionary applications (such as *Vocabulary.com*, *Oxford Learner's Dictionary*) to learn new English words.

    f. Strongly disagree

    g. Disagree

    h. Neither agree nor disagree

    i. Agree

    j. Strongly agree

Please write your comments in the space provided with neat and clear handwriting. Thank you for your answers!

13. Comments on the games and the dictionary of *Vocabulary.com*, and what is it like compared to other digital vocabulary learning games you use (such as Duolingo, WordDive, Quizlet):

_____

_____

_____

_____

_____

_____

_____

14. If you could plan your own vocabulary learning game, what would it be like?

_____

_____

_____

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_____

Appendix 4: Summary of answers to Questionnaire 2

Likert items	First-year students (n=25)					In percentages, %				
	Strongly disagree	Disagree	Neither agree nor didagree	Agree	Strongly agree	Strongly disagree	Disagree	Neither agree nor didagree	Agree	Strongly agree
1. I learned many new words during the second obligatory English course.		4	6	15		0	16	24	60	0
2. Vocabulary.com did not affect my motivation to learn new vocabulary		2	8	6	9	0	8	32	24	36
3. The points achieved in the games of Vocabulary.com motivated me to practise English words.	7	8	5	4	1	28	32	20	16	4
4. I liked testing a new vocabulary game a lot.	3	3	4	13	2	12	12	16	52	8
5. I would have learned the same number of words during the course also without Vocabulary.com.		1	8	8	8	0	4	32	32	32
6. Vocabulary.com was useful in learning new English words and preparing for the word tests.	4	6	7	8		16	24	32	38	0
7. Vocabulary.com (e.g. Vocabulary Jam) did not add value to the English classes.	1	5	9	6	3	4	20	36	24	12
8. Vocabulary.com was easy to use even though it was in Enlish only.	3	3	6	11	2	12	12	24	44	8
9. I found it difficult to understand the explanations in the dictionary of Vocabulary.com and/or the questions in the game.	3	10	9	1	2	12	40	36	4	8
10. I prefer Quizlet to learn English words.		3	4	4	14	0	12	16	16	56
11. I would have used the game and/or the dictionary of Vocabulary.com more if I had had the Vocabulary.com mobile app on my phone.	2	5	9	8	1	8	20	36	32	4
12. I like to use monolingual (English-English) (online) dictionaries or dictionary applications (such as Vocabulary.com, Oxford Learner's Dictionary) to learn new English words.	2	8	9	5	1	8	32	36	20	4