English (L2) vocabulary knowledge of Dutch university students

An exploratory study

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Abstract (211 words)

Even though a growing number of educational programmes in the Netherlands are taught in English, little is known about the literacy skills of Dutch students in English as a second language. Vocabulary knowledge is essential in language mastery. This study provides insights into the general English (3,000 word-level) vocabulary and academic English vocabulary knowledge of Dutch university students. The study included two factors that are important in predicting students' vocabulary knowledge: morphological awareness and reading attitudes. The current study conducted an online vocabulary test on two levels (general English 3,000 word-level vocabulary and academic English vocabulary), a morphological awareness test and a questionnaire about reading for study purposes in English under 111 Dutch students. Results indicated that both general and academic English vocabulary were below mastery level, implicating that educational improvements need to be made, so students can extend their vocabulary knowledge to the acquired level. Furthermore, morphological awareness was shown to be a significant predictor for vocabulary knowledge on both levels, whereas causal relationships between vocabulary and reading attitudes could not be established in the current research. The study extends the existing academic knowledge on both vocabulary knowledge and morphological awareness in Dutch students, thereby contributing to the academic field. Furthermore, suggestions for future research and practical implications are offered.

Introduction

In the Netherlands, English is often used as a second language next to Dutch (Ridder, 1995). The role of English in general has grown in the Netherlands over the years. There is even a certain amount of bilingualism assumed in the general population (Edwards, 2014). In a survey on multilingualism, 90 percent of the Dutch participants reported on speaking English as a foreign language well enough to have a conversation in English (European Commission, 2012). Additionally, popular media seem to suggest that the Dutch population has a high standard of English (NOS, 2016; Bol, 2016). However, these statements are based on popular studies, whereas scientific evidence to support the statements is limited. A question that arises is whether the English knowledge of the Dutch is truly at that high standard.

Underlining the growing importance of English and the faith in the English knowledge of the Dutch, is the amount of English taught programmes in Dutch higher education. The Netherlands was identified as the leading non-English speaking European country in the provision of higher Education in English, offering about 30 percent of their educational programmes in English in 2008 (Wächter & Maiworm, 2008). A number that has only grown since then.

However, little is known about the English as a second language (L2) knowledge of Dutch university students. There are indications that Dutch students studying in their native language outperform Dutch students studying in English (L2) (De Vos, Schriefers & Lemhöfer, 2019), proposing a possible disadvantage for Dutch students studying in English (L2). This makes the question arise whether Dutch students' English knowledge is according to the standards needed in order to follow their study programmes in English.

When studying through the medium of English (L2), it is essential that literacy skills in English (L2) are well-developed. Given that a growing number of educational programmes in the Dutch higher education system are being taught in English, exploring these literacy skills of Dutch students is essential in order to make an estimation of their ability to follow these programmes. The current study aims to explore students' English (L2) vocabulary knowledge on a general and an academic level and additionally investigate possible predictors of this vocabulary knowledge.

In the theoretical framework the most important constructs in order to get to the research questions will be explained. It will provide an overview of the importance of reading, globalization

in higher education, and reading ability in a second language (L2). Furthermore, concepts determining the research questions, namely vocabulary knowledge, morphological awareness and attitude towards reading will be laid out. Subsequently, an outline of the study will be provided, and the methodology will be explained. Results will offer empirical foundations for effective educational interventions, designed to improve literacy skills needed for reading and writing in English (L2) at tertiary level.

Theoretical framework

The importance of reading

Reading plays an important role in our everyday lives. It enables people to gain knowledge on different subjects. To understand basic information about, for example, hygiene, diet and safety alone, people often need to be able to understand written language (Castles, Rastle, & Nation, 2018).

In all stages of education, reading plays an even bigger role in the learning process of students. Positive correlations have been found between academic achievement and reading comprehension (García-Madruga, Vila, Gómez-Veiga, Duque & Elosúa, 2014; Mol & Bus, 2011). Therefore, it is no surprise that reading plays an important role in educational practices. Without adequate reading comprehension, it is difficult to achieve academic goals, since a lot of information is offered in the form of written text.

Especially in higher education, reading contributes greatly to the transfer of knowledge, which is underlined by findings suggesting a positive relation between reading comprehension and academic achievements in university students (e.g. Shaw & McMillion, 2011; Stoffelsma & Spooren, 2018; Stoffelsma, Spooren, Mwinlaaru & Antwi, accepted). Reading is a necessary academic task that students need to master. It can even be seen as 'the essence of all formal education' (Bharuthram, 2012, p. 205). Students can access the information needed for their studies through reading. Accordingly, they must be able to decode the information as well as comprehend what they have read. Since reading comprehension is essential for analysing and evaluating information, a lack of comprehension can affect academic performance (Bharuthram, 2012).

Globalization in higher education

The world is becoming more and more globalized, which causes internationalization in higher education. New technologies and the internet provide possibilities to share knowledge globally. Universities look across the borders of their countries and start competing at an international level, wanting to attract the best researchers and students from all over the world. In order for this internationalization to be effective, it is important that teachers, researchers and students from different parts of the world are able to communicate in English as a global academic language (Graddol, 2006).

Because of globalization the group of students receiving their education in English as a second language (ESL) is growing, since many universities have started offering study programs in English (Graddol, 2006). This large and growing group of English second-language (L2) students is an important group to take into consideration when thinking about educational practices, because studying in ESL might affect, for example, students' capacity to process the texts they need to study.

Reading abilities of natives and L2 readers

Generally speaking, people who read in their second language have a disadvantage when compared with people who are reading in their first language (Favreau & Segalowitz, 1982; Lervag & Aukrust, 2010; Shaw & McMillion, 2008). Differences that have been found include, for example, differences in reading speed, which is higher for people reading in their first language (Favreau & Segalowitz, 1982; Shaw & McMillion, 2008). Furthermore, a better reading comprehension was found in people reading in their first language as opposed to second language readers (Lervag & Aukrust, 2010; Shaw & McMillion, 2008). Other differences that have been found are differences in comprehension, recall of the learned information and time to perform reading tasks, on which readers reading in their first language (L1) outperformed L2 readers on all aspects (Shaw & McMillion, 2008).

These results show the disadvantage for readers who are reading in their second language, implying that reading in one's second language is more difficult than in a first language. Considering that reading is more difficult in a second language than in a first language, the need

to investigate learning practices and the effect of reading in English as a second language (ESL) on academic achievement arises. Especially interesting are underlying componential skills of reading, such as vocabulary knowledge and morphological awareness, that are necessary in order to sufficiently master ESL reading, more specifically ESL reading in an academic context.

Vocabulary knowledge

Mastery of the English language is essential to be able to read study materials in English. Successful ways to learn how to read and understand texts have been debated in educational settings (Castles et al., 2018). Learning the vocabulary of a second language is a necessary component of language mastery (Schmitt, 2010). Laufer and Sim (1985) identify vocabulary as the 'most important element for interpretation' (p. 410), which is crucial in understanding what you read (e.g. Nation & Waring, 1997; Stahl, 1990).

Laufer and Aviad-Levitzky (2017) investigated what kind of vocabulary knowledge test (vocabulary recall or vocabulary recognition) best predicts the reading comprehension of undergraduate Israeli students. Findings showed that both vocabulary tests were good predictors of reading comprehension. However, the predictive power of the recognition test was slightly better. Irrespective of the test used, vocabulary showed to be a good predictor of reading comprehension.

Vocabulary size was not only found to be a good predictor of reading comprehension, but it also correlates with a person's writing quality (Astika, 1993). Next to reading, writing plays an important role in academic studies, since many papers and exams are written in English. The type of vocabulary knowledge needed in order to read and write in English can be identified as two different kinds of vocabulary knowledge. In order to read and comprehend texts, passive or receptive vocabulary knowledge is necessary. Our passive or receptive vocabulary entails "that we are able to perceive the form of the word and retrieve its meaning or meanings" (Laufer & Goldstein, 2004, p. 404). Active or productive vocabulary knowledge is needed in order to produce the words by oneself, when writing or speaking. Therefore, active vocabulary knowledge implies "that we can retrieve the appropriate spoken or written word form of the meaning that we want to express" (Laufer & Goldstein, 2004, p. 404).

Productive vocabulary can be tested controlled or freely. Free productive vocabulary knowledge is the "use of words at one's free will, without any specific prompts for particular words" (Laufer & Goldstein, 2004, p. 257). Controlled productive vocabulary is "producing words when prompted by a task" (Laufer & Goldstein, 2004, p. 257). An example thereof is when a participant is being asked to complete the word Bicycle in the sentence "He was riding a bi____.".

In order to actively produce words, understanding them is essential. Receptive knowledge of a word is a requirement of productive knowledge and thus, receptive vocabulary knowledge is automatically larger than productive vocabulary knowledge (Laufer, 1998; Nizonkiza, 2016; Zhong & Hirsh, 2009). However, the growth of the different types of vocabulary knowledge is positively correlated (Zhong & Hirsh, 2009). Given this simultaneous growth, it can be assumed that productive vocabulary knowledge predicts receptive vocabulary and the other way around. In this study the choice was made to test the controlled productive vocabulary of the participants, since using this type of test provides information about both participants' productive as well as their receptive vocabulary knowledge.

Vocabulary knowledge in a second language
Second language users tend to have a smaller vocabulary size in their L2 than native speakers of the same language. In order to estimate the amount of words needed to participate in environments where the L2 is used (e.g. educational settings), it can be helpful to look at native speakers' vocabulary size (Nation & Waring, 1997).

Goulden, Nation and Read (1990) found that a native English-speaking university graduate, learns around two to three words per day, resulting in a vocabulary size containing about 17,000 base words when the speaker has reached an age of about 20. Words can be researched as parts of word families. These word families include not only the base word (e.g. adventure or run), but also inflected forms of the word (e.g. adventures or ran) and regular derived forms of that word (e.g. adventurous or runner) (Bauer & Nation, 1993). According to Nation (2006) native speakers of English learn about 1,000 word-families every year, until they are around the age of 20. Taking into account different studies, Schmitt (2010) concludes that it can be estimated that native speakers know a range of 16,000 to 20,000 word-families.

Students who read and write in a second language do not need to achieve the same vocabulary size as natives. Some words occur more frequently in texts than others. Language learners mostly start by learning high-frequency words, rather than the low(er)-frequency words (Nation, 2006). If an English learner knows a certain number of high frequency words, he or she will understand large parts of texts (Nation & Waring, 1997). The percentage of words in the text known by readers (i.e. text coverage) is positively related to the readers' reading comprehension (Nation, 2006).

Hu and Nation (2000) found that in order to adequately comprehend texts, the reader needs a text coverage of 98%. This coverage level means that only one in fifty words is unknown by the reader. The vocabulary levels that are needed for a 98% word-coverage differ per text genre. To gain a level of 98% text coverage of, for example, newspapers, the reader needs to have a vocabulary of approximately 8,000 to 9,000 word-families (Nation, 2006). A minimum vocabulary covering 3,000 word-families, for example, is needed to provide a basis for comprehension of novels (Nation & Waring, 1997).

Academic vocabulary

Students attending university courses taught in English need a more specific vocabulary to understand academic texts (Nation & Waring, 1997). Coxhead (2000) developed an academic word list (AWL) specializing in academic vocabulary. It includes 570 word-families that are common in academic texts, irrespective of the subject area. For students needing to read in English for their academic studies, knowing these words will help them to fully comprehend academic texts. This specific vocabulary knowledge, combined with the minimum vocabulary of 3,000 words, should provide a sufficient vocabulary basis for ESL university students reading for academic purposes.

Morphological awareness

In the previous sections, it has become clear that vocabulary knowledge plays an important role in reading comprehension. Different studies show that not only vocabulary knowledge influences reading comprehension, but that another componental skill called morphological awareness

contributes to the development of reading comprehension as well (Guo, Roehrig & Williams, 2011; Kuo & Anderson, 2006; Wilson-Fowler & Apel, 2015).

Morphological awareness can be defined as "explicit knowledge of the way in which words are built up by combining smaller meaningful units, such as prefixes, roots and suffixes" (Guo et al., 2011, p. 160). These smaller meaningful units can be referred to as morphemes, which are the smallest possible meaningful units of language. By combining morphemes, more complex words can be built (Wilson-Fowler & Apel, 2015). When a reader uses his or her morphological awareness, word understanding does not have to depend on the existing vocabulary of the reader, but can be based on analysing the different morphemes of the word (Castles et al., 2018). That way, a reader can understand a morphologically more complex word like 'knotless', because he or she recognises the word 'knot' and knows what the suffix '-less' entails. That way, morphological awareness makes it possible to understand words one has never seen before (e.g. Rastle & Davis, 2008).

Morphological awareness and reading comprehension
Abilities to use morphological awareness to interpret words, are associated with reading performance (e.g., Carlisle, 2000; Singson, Mahony & Mann, 2000). Students with a well-developed morphological awareness and vocabulary knowledge are more skilled at reading (Guo et al., 2011). In both L1 and L2 research, proof has been found pointing out that morphological awareness is a predictor for better reading comprehension (Ku & Anderson, 2003).

Morphological awareness becomes more important when people become more skilled at reading. When children start learning to read, phonological awareness is the first step in their learning process. Phonological awareness concerns linking the written letters to the sounds that correspond with them. When reading skills become further developed this focus on phonological awareness shifts to morphological awareness. This means, that the more advanced one is at reading, the more dependent one becomes on morphological awareness and vocabulary knowledge (Castles et al., 2018). The complexity of texts increases as people get further in education (Nagy, Diakidoy & Anderson, 1993). Content and vocabulary of the texts that they use are probably more difficult than those of less advanced readers (Guo et al., 2011). Therefore,

people who are more advanced readers are more likely to use their morphological awareness in understanding texts than less advanced readers. Considering that university students belong to a highly educated group, it can be assumed that most of them are advanced readers. Therefore, they are likely to use their morphological awareness for text comprehension.

Whereas most studies on morphological awareness focus on the development thereof in children in primary- or middle school (e.g. Carlisle, 2000; Singson et al., 2000), there is some evidence that morphological awareness influences L1 reading comprehension at tertiary level as well (e.g. Wilson-Fowler & Apel, 2015; Guo et al., 2011). Furthermore, there is research evidence that morphological awareness is a significant predictor of L2 reading (Jeon, 2011; Kieffer & Lesaux, 2008; Stoffelsma et al., accepted). Since there is still much unknown about morphological awareness of college and university students, more research is needed to fill that gap. Despite the research conducted on the effect of morphological awareness on L2 reading, to the best of my knowledge, no research has investigated Dutch students' morphological awareness of ESL.

Morphological awareness and vocabulary knowledge

Morphological awareness and vocabulary knowledge are positively correlated in children learning a language (e.g., Ku & Anderson, 2003; McBride-Chang, Shu, Zhou, Wat & Wagner, 2003). There seems to be a relationship between morphological awareness and vocabulary size in a second language (Akbulut, 2017; Stoffelsma et al., accepted). The current study will investigate whether this relationship can be found for native Dutch students' English morphological awareness as well.

Attitudes towards reading

Not only vocabulary knowledge and morphological awareness seem to influence reading comprehension. Proof has been found that a person's attitude towards reading is an important factor for reading comprehension as well (Bastug, 2014; Martinez, Aricak & Jewell, 2008; McKenna, Kear & Ellsworth, 1995).

However, there seem to be differences in attitudes towards reading in L1 and L2 (Yamashita, 2007). Yamashita (2007) for example, reports that Japanese students feel more comfortable reading in Japanese than in English and students feel more anxious when reading in

ESL. Furthermore, the same study shows that students reported on believing to obtain higher intellectual development from reading in their L1 than in their L2.

Pecorari, Shaw, Irvine, Malström, & Mezek (2012) looked into Swedish student's opinion towards the use of English textbooks for academic purposes, since many textbooks and other literature are written and read in English. Findings indicate that students grant positive characteristics to textbooks in general and English textbooks are being assessed positively as well (Pecorari et al., 2012). Even though students' attitudes towards textbooks in the study by Pecorari et al. (2012) is generally positive, they are critical about the readability of books written in English, assessing them as more difficult than books in their native language.

Reading in English instead of the native language (e.g. Swedish in the studies of Pecorari, Shaw, Malmström & Irvine (2011)) seems to be more demanding. In the study of Pecorari et al. (2011) 55% of the participants reported understanding less when the textbook was in English than when it was in Swedish. However, 35% of the students reported that they did not encounter a difference in understanding between Swedish and English textbooks. Since the same shift towards using study materials in English, as opposed to the native language (in this case Dutch), is happening in the Netherlands, the current study will also focus on students' attitudes towards reading study materials in English instead of Dutch.

Reading attitude and vocabulary knowledge

Students' attitudes towards reading can be indirectly connected to their vocabulary knowledge. As stated before, vocabulary knowledge influences reading comprehension in a positive manner (e.g. Laufer & Sim, 1985; Nation & Waring, 1997; Stahl, 1990). Students who read well, are likely to enjoy reading more, i.e. develop positive attitudes towards reading, and consequently will read more, which results in further development of reading fluency and advanced reading comprehension skills. This positive reading cycle is referred to as the cycle of growth by Nuttall (2005).

Other research confirms this cycle of growth, stating that reading ability influences attitudes towards reading. A more positive attitude towards reading results in people being more likely to engage in reading activities, causing them to reach higher reading achievements (e.g.

Chen, Chen, Chen & Wey, 2013; Martínez et al., 2008; McKenna et al., 1995; Taylor & McAtee, 2003). Linking students' attitudes towards reading with their vocabulary knowledge, as proposed in the current research, will provide further insights as to what extent students' attitudes towards reading correlates positively with their vocabulary knowledge.

The current study

The importance of reading comprehension in higher education is undeniable. Reading comprehension is positively related to vocabulary knowledge, since vocabulary knowledge is a necessity in order to comprehend written information (e.g. Laufer & Sim, 1985; Nation & Waring, 1997; Stahl, 1990). Globalization in higher education, with English as the global academic language, results in students needing to have sufficient knowledge of the English language, a language that for many of them is their second language (L2). In order to understand their study materials, they need to have a sufficient vocabulary knowledge in English. Specifically, a vocabulary covering common academic words as well as high-frequency words in English.

With many universities offering study programs in English, the group of students receiving their education in English is growing (Graddol, 2006), making it very relevant investigate education in English as a second language (ESL). Universities in the Netherlands are no exception to this new trend of using English as a language of instruction. The current explorative study will attempt to investigate the characteristics of Dutch university students' English L2 vocabulary knowledge, by answer the following research question:

RQ1: Do Dutch students have sufficient mastery of the most frequent words in English (3,000 word-level) and academic words?

Both morphological awareness and attitude towards reading might be predictors of vocabulary knowledge. Therefore, the following research questions will be answered:

RQ2: Is morphological awareness a predictor of English L2 vocabulary knowledge for Dutch university students?

RQ3: Is attitude towards reading in English a predictor of English L2 vocabulary knowledge for Dutch university students?

Method

Materials

The material used for this research was a combined language test and questionnaire, which consisted of three parts.

The first part focussed on participants' productive English vocabulary knowledge. Their knowledge of the 3,000 most frequent words in English were tested based on the controlled-production Vocabulary Levels Test (VLT) by Laufer and Nation (1999), which contains 18 items that represent 3,000 English high-frequency words. Another 18 items from the VLT tested students' productive vocabulary recall of academic words, these items represent 836 English academic words. The test items consisted of sentences in which one word was underlined. The word was not complete. Participants were asked to complete the underlined word in each sentence. An example of a VLT test item is displayed in example 1.

He was riding a bi_____. ⟹ He was riding a bi***cycle***.

Example 1.   Vocabulary knowledge test item.

The second part of the test focussed on students' morphological awareness. Students' morphological awareness was assessed using part of the Morphological Awareness Measure for College students, developed by Wilson-Fowler and Apel (2015). Eight non-word sentence completion tasks (NWSC) were used in which students had to complete a sentence by selecting a word that was built of real affixes combined with nonsense base- and root words. Example 2 displays an example of a test item from the morphological awareness test.

Example: Despite her knowledge, the _____ was unable to respond to the question.
☐ floxatize   ☐ floxatism   X floxatist   ☐ floxatation

Example 2.   Morphological awareness test item.

To ensure that a broad variety of test items were used, two versions of the first part of the test were developed, containing different word families. This assured an equal and broad spread of the items over the sample.

The third part of the questionnaire included questions about participants' reading behaviour and their attitudes towards reading in English. The topics, items and answering possibilities are displayed in table 1. Items 1-3 were based on the Progress in International Reading Literacy (PIRLS) study (Mullis, Martin, Foy, & Hooper, 2017). PIRLS focusses on primary-school students' reading in their L1, but the test-items are relevant in a setting with older participants in an L2 setting, because when they are slightly altered, they can provide relevant information on the reading behaviour as well as reading attitudes at other levels as well. Item 4 of the questionnaire was based on the work of Pecorari et al. (2012). These were questions about students' attitudes towards academic reading in English.

The last part of the questionnaire contained questions regarding the demographic information of the participants, such as their age, educational level, study programme, gender and mother tongue. The entire questionnaire was added in the appendix.

Table 1.   Topics, questions and answering possibilities questionnaire.

Topic	Questions	Answering possibilities
Reading behaviour	1. How often do your university lecturers give you reading assignments in English for your courses, such as reading textbooks or articles?	Never, 1-2 times a week, 3-4 times a week, every day.
	2. How often do you read in English for enjoyment (for example stories or novels, magazines, newspapers, online-news websites)?	Every day or almost every day, once or twice a week, once or twice a month, never or almost never.
Attitude towards reading in English	3. What do you think about reading in English (textbooks, articles, etc.) for your courses?	Agree a lot, agree a little, disagree a little, disagree a lot.

	- I read only if I have to	
	- I think reading is boring	
	- I need to read well for my future (*reverse coded*)	
	- I enjoy reading (*reverse coded*)	
Attitude towards academic reading in English and Dutch	4. Indicate to what extend the statements about academic reading are true for you. - Reading a textbook in English requires more effort than reading in Dutch. (*reverse coded*) - If a textbook is in English, the language influences how well I understand it. (*reverse coded*) - If I could choose, I'd prefer to have textbooks in English rather than in Dutch.	Strongly disagree, disagree, neither agree/disagree, agree, strongly agree.
Demographic information	5. How old are you?	Open question
	6. What is your highest level of education?	Vmbo, havo, vwo, mbo, hbo, wo Bachelor, wo Master
	7. In what year of studies are you?	1, 2, 3, 4, 5, 6, other
	8. What is the name of your study programme?	Open question
	9. What is your gender?	Male, female, other, I would rather not say
	10. What is your native language?	Dutch, other namely:

Participants

A group of 179 participants was recruited from the personal network of the researcher. Of those 179 participants, 26 participants were not enrolled at a Dutch university at the time the questionnaire was conducted, 36 participants did not finish the questionnaire and 6 participants did not have Dutch as their native language. Because these students did not meet the sample criteria, these 55 participants were excluded from the dataset. Of the remaining 111 participants, 55 participants completed the first version of the test and 56 participants completed the second version of the test. The average age of the participants was 22 years old, with a minimum age of 18 and a maximum age of 27 years old. A total of 6 participants did not share their age. Of the participants, 77 percent was female, the rest was male. The educational level of the participants was either university of applied sciences (11.7%) or university (88.3%).

Design

The current study will be an exploratory study, looking at the independent variables' (morphological awareness and attitude towards reading in English) effect on the dependent variable (vocabulary knowledge, divided into general vocabulary knowledge (3,000 words) and academic vocabulary knowledge) according to the following research model:
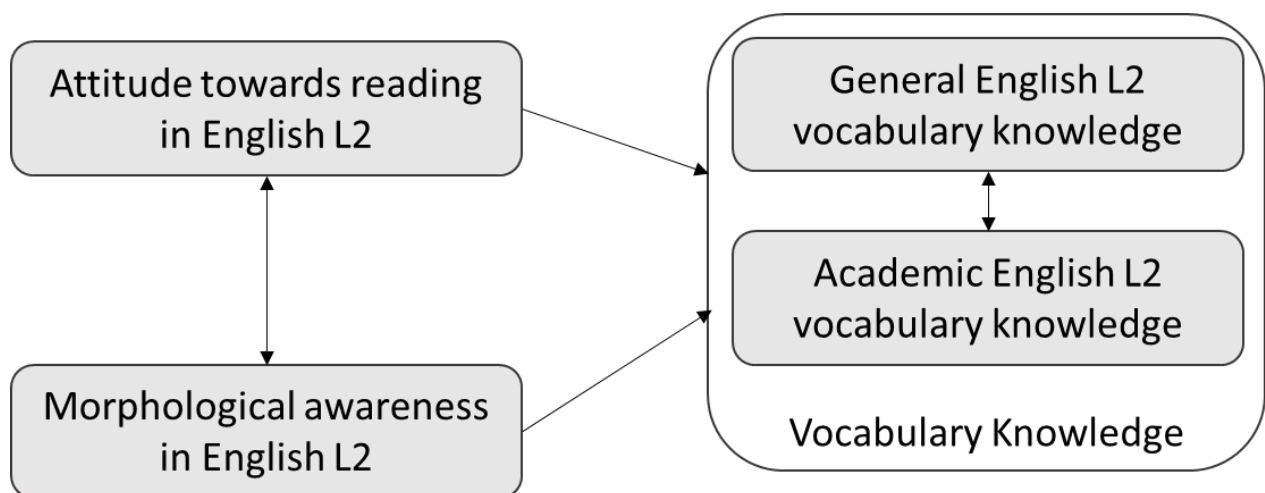

Figure 1.   Research model English L2 for Dutch university students

Procedure

Participants were mainly recruited from the personal network of the researcher. In order to extend the data set, the platform SurveySwap was used to add additional participants. Participation was completely voluntary. For most of the participants there was no reward for taking part in the study. The participants reached via SurveySwap received 'Survey points' for finishing the questionnaire. Those points could be used to 'pay' participants to take their own surveys.

The test was an online test in Qualtrics. Before starting the test, the participants were offered written information about the study. They were informed that all information would be processed anonymously, and that their participation was completely voluntary. They were also informed that further information could be retrieved by contacting the researcher, whose e-mail address was provided.

Before the questionnaire truly started, participants were asked whether they were currently a student at a Dutch university. If this was not the case, they were shown an 'End of Survey' block, in which it was explained that they were not part of the target group and they were thanked for their time and willingness to participate. If the participant was currently a student at a Dutch university, the questionnaire proceeded with either the first or the second version of the vocabulary test, followed by the morphological awareness test, questions about their reading attitudes and questions about their demographic background.

Data analyses

In order to use the data for further analyses, the results of the vocabulary and morphological awareness tests were manually checked. The participant gained one point for every correct answer and zero points for an incorrect answer. Using the means of these points, the percentage correct per participant was calculated per category (3000 word-level, academic word-level, morphological awareness).

Laufer and Nation (1999) propose that a satisfactory mastery level should be around 85-90% correct for the 2,000 word-level, indicating that less than 150 words at that particular level are not readily available for productive use. In line with this suggestion, a cut-off point of 85% was

set for the current study, in which participants scoring 85% or higher scored sufficiently, whereas participants scoring below 85% scored insufficiently.

Furthermore, the variable 'Attitude towards reading in English' was computed based on four separate items. The items were four possible answers to the question: "What do you think about reading in English (textbooks, articles, etc.) for your courses?" anchored by four point Likert scales (1=agree a lot, 4 =disagree a lot). The statements made were: 'I read only if I have to', 'I think reading is boring', 'I need to read well for my future', and 'I enjoy reading'. The reliability of this scale comprising four items was good: α = .80. Consequently, the mean of those four items was used to calculate the compound variable 'Attitude towards reading in English', which was used in the further analyses.

Another variable, namely 'Attitude English over Dutch', was measured with three separate items. In answering the following statements about academic reading on five-point Likert scales (1=strongly disagree, 5= strongly agree). The statements made were: 'Reading a textbook in English requires more effort than reading in Dutch', 'If a textbook is in English, the language influences how well I understand it', and 'If I could choose, I'd prefer to have textbooks in English rather than in Dutch.'. The reliability of this scale comprising three items was good: α = .80. Consequently, the mean of those three items was used to calculate the compound variable 'Attitude English over Dutch', which was used in the further analyses.

Since the current study was an exploratory study, the descriptive statistics of the test-results were reported first. These provided insight into the vocabulary knowledge of Dutch university students. Furthermore, a multiple regression analysis was run to investigate whether students' attitudes towards reading in English and their morphological awareness were predictors of vocabulary knowledge. A correlation analysis was used to provide insights into a possible correlation between morphological awareness, reading attitude and vocabulary knowledge.

Results

Vocabulary tests

The mean score of the entire sample was 78.5% (*SD* = 14.11) for the 3,000 word-level and 66.9% *(SD* = 14.55) for the academic word-level. Ranging from 33% correct to 100% correct for the 3,000

word-level and 22% correct to 100% correct for the academic word-level. As for the morphological awareness test, a mean score of the sample was of 66.9% (*SD* = 17.17) correct was found, ranging between 29% and 100% correct. Means and standard deviations are displayed in table 2.

Table 2.   Number of participants, Means (in percentages) and standard deviations for the score on 3000 word-level, academic word-level and morphological awareness scales

	N	M in %	SD
3000 word-level	111	78.5	14.11
Academic word-level	111	66.9	14.55
Morphological awareness	111	85.5	17.17

Additional variables were computed, in order to determine the number of participants scoring less than 85 percent on the different parts of the vocabulary test. Table 3 shows the number of participants scoring 85% or less on the vocabulary test.

Table 3.   Number of participants (out of *N* = 111) and percentage of participants scoring less than 85 percent on the 3000 word-level vocabulary test and academic word-level vocabulary test

	N	%
3000 word-level	70	63.1
Academic word-level	101	91.0

Table 3 shows that 70 participants (63.1%) scored below 85% correct on their 3,000 word-level vocabulary test, whereas 101 participants (91.0%) scored less than 85% correct on their academic word-level test. Of the 111 participants, 29 participants (26.1%) of the participants scored below 85% on the morphological awareness items.

A correlation was run to investigate whether the percentage correct on the 3,000 word-level correlated with the percentage correct on academic word-level. A significant positive correlation was found between the participants' scores on the 3,000 word-level and academic word-level (r (111) = .52, p < .001). The percentage correct on 3,000 word-level increases with the percentage correct on academic word level.

Attitude

Figure 2 displays how often university lecturers gave the participants reading assignments in English for their courses. Most students reported to receive a reading assignment in English three to four times a week (36.9%), only a few students (10.8%) reported to never receive a reading assignment in English for their courses.
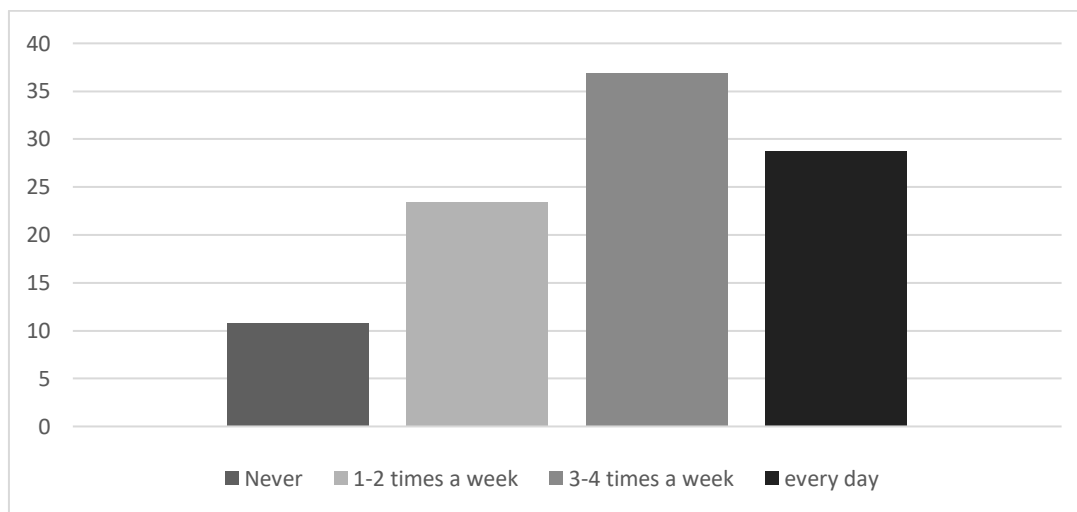

Figure 2.   'How often do your university lecturers give you reading assignments in English, for your courses, such as reading textbooks or articles?' in percentages (*N* = 111).

The attitude of Dutch university students towards reading in English was predominantly positive. On a scale from 1 (negative attitude towards reading in English) to 4 (positive attitude towards reading in English) they scored an average of 3.15 (*SD* = .69).

Table 4 displays the means of the three items forming 'Attitude English over Dutch', consisting of the statements 1. 'Reading a textbook in English requires more effort than reading in Dutch'; 2.

'If a textbook is in English, the language influences how well I understand it' and; 3. 'If I could choose, I'd prefer to have textbooks in English rather than in Dutch'. For example, item 1 has a mean score of 3.18 (*SD* = 1.26), which means that participants rated reading a textbook in English to take more effort than reading in Dutch. Similarly, the mean score of 3.12 (*SD* = 1.14) on item 2 indicates that the understanding of how well a textbook is understood is influenced by the language, if the textbook is in English. The mean score of item 3, proposing a choice between English or Dutch textbooks, was 3.13 (*SD* = 1.29), indicating that participants had a minor preference to read textbooks in English rather than in Dutch. The overall mean on the scale 'Attitude English over Dutch', which was calculated based on the three items, whereby the first two items were reverse-coded, was rather neutral: 2.94 (*SD* = 1.04) (value 3.00 was 'neutral'), meaning that participants overall did not seem to have very different opinions about textbooks in English than they do about textbooks in Dutch.

Table 4.   Means and standard deviations for the items forming 'Attitude English over Dutch', consisting of three items (*N* = 111, 1 = Strongly disagree, 5 = Strongly agree)

Item	*M*	*SD*
1. Reading a textbook in English requires more effort than reading in Dutch.	3.18	1.26
2. If a textbook is in English, the language influences how well I understand it.	3.12	1.14
3. If I could choose, I'd prefer to have textbooks in English rather than in Dutch.	3.13	1.29
Computed variable: Attitude English over Dutch	2.94	1.04

Recoding the variables into 'positive' (values 1 and 2 for items 1 and 2; values 4 and 5 for item 3), 'neutral' (value 3) and 'negative' (values 4 and 5 for items 1 and 2; values 1 and 2 for item 3) attitudes, a new variable was used in order to determine how many students had a more positive as opposed to a more negative opinion towards reading in English as opposed to reading in Dutch. Table 5 shows the percentages per item.

Table 5.   Percentages negative, neutral and positive responses to the items forming
           'Attitude English over Dutch', consisting of three items (*N* = 111)

Item	Negative in %	Neutral in %	Positive in %
1. Reading a textbook in English requires more effort than reading in Dutch.	50.5	15.3	34.2
2. If a textbook is in English, the language influences how well I understand it.	44.1	23.4	32.4
3. If I could choose, I'd prefer to have textbooks in English rather than in Dutch.	36.9	18.9	44.1

Table 5 shows that on the first item, the majority, namely 50.5%, of the participants had a negative opinion towards reading in English as opposed to reading in Dutch, meaning that 50.5% of the participants either agreed or strongly agreed that reading a textbook in English requires more effort than reading in Dutch (Item 1). Furthermore, it shows that 44.1% of the participants had a rather negative opinion about understanding a textbook in English, which they showed by either agreeing or strongly agreeing that if a textbook is in English the language would influence how well they would understand it (item 2). However, table 5 also shows that 44.1% of the participants either agreed or strongly agreed that if they had the choice, they would have their textbooks in English rather than in Dutch (item 3).

Linking attitude and morphological awareness to English academic and 3,000 word-level vocabulary knowledge

A multiple regression analysis with as a dependent variable the mean score on the 3,000 word-level test and as independent variables 'Attitude towards reading in English', 'Attitude English over Dutch' and 'Morphological awareness' showed that the independent variables explained

35% of the variance in how well participants scored on the 3,000 word-level vocabulary test (F (3, 107) = 20.82, p < .001, adjusted R^2 = .35).

The outcomes for the regression analyses for vocabulary knowledge of the 3,000 word-level, attitude towards reading in English, attitude English over Dutch and morphological awareness are displayed in table 6.

Table 6.   Regression analysis for vocabulary knowledge of the 3,000 word-level, attitude towards reading in English, attitude English over Dutch and morphological awareness (N = 111)

Variable	B	$SE\ B$	β
Intercept	31.45	6.42	
Attitude towards reading in English	1.20	1.76	.06
Attitude English over Dutch	3.74	1.10	.28**
Morphological awareness	.38	.07	.46***
Adjusted R^2	.46		
F	32.34***		

** p = .001, *** p < .001

A multiple regression analysis with as a dependent variable the mean score on the academic word-level test and as independent variables 'Attitude towards reading in English', 'Attitude English over Dutch' and 'Morphological awareness' showed that the independent variables explained 34% of the variance in how well participants scored on the academic word-level vocabulary test (F (3,107) = 19.69, p < .001, adjusted R^2 = .34).

The outcomes for the regression analyses for vocabulary knowledge of the academic word-level, attitude towards reading in English, attitude English over Dutch and morphological awareness are displayed in table 7.

Table 7. Regression analysis for vocabulary knowledge of the academic word-level, attitude towards reading in English, attitude English over Dutch and morphological awareness (N = 111)

Variable	B	$SE\ B$	β
Intercept	20.08	6.69	
Attitude towards reading in English	.64	1.84	.03
Attitude English over Dutch	4.11	1.14	.30***
Morphological awareness	.38	.07	.46***
Adjusted R^2	.46		
F	32.34***		

** p = .001, *** p < .001

Attitude scales and vocabulary knowledge 3,000 word-level

'Attitude English over Dutch' was shown to be a significant predictor (β = .28, p = .001) of the vocabulary knowledge of the 3,000 word-level. When the attitude towards reading in English over reading in Dutch goes up, the percentage correct on the vocabulary 3,000 word-level test goes up with .28 standard deviation, given that all other variables are kept constant. Additionally, a significant positive correlation was found between 'Attitude English over Dutch' and the vocabulary knowledge of the 3,000 word-level (r (111) = .38, p < .001) (see table 8). The 3,000 word-level vocabulary knowledge increases with a more positive attitude towards reading in English over reading in Dutch, suggesting a causal relationship between Attitude English over Dutch on the 3,000 word-level vocabulary knowledge.

'Attitude towards reading in English' did not show to be a significant predictor of vocabulary knowledge of the 3,000 word-level (β = .06, p = .449). Contradictory, a significant positive

correlation was found between vocabulary knowledge of the 3,000 word-level and 'Attitude towards reading in English' (r (111) = .33, p < .001) (table 8). The vocabulary knowledge of the 3,000 word-level increases with a more positive attitude towards reading in English, suggesting a causal relationship between the attitude towards reading on the 3,000 word-level vocabulary knowledge.

Morphological awareness and vocabulary knowledge 3,000 word-level

Additionally, morphological awareness was a significant predictor of vocabulary knowledge of the 3,000 word-level (β = .46, p <.001). When the participant scores higher on the morphological awareness test, the vocabulary knowledge of the 3,000 word-level goes up with .46 standard deviation, given that all other variables are kept constant. Consequently, a significant positive correlation was found between morphological awareness and vocabulary knowledge of the 3,000 word-level (r (111) = .53, p < .001). This suggests a causal relationship in which vocabulary knowledge at the 3,000 word-level increases with better morphological awareness.

Correlations between vocabulary knowledge 3,000 word-level, morphological awareness and attitude scales are displayed in table 8.

Table 8.　　Correlations (r) between vocabulary knowledge 3,000 word-level, morphological awareness, Attitude towards reading in English and Attitude English over Dutch (N = 111)

Variable	Vocabulary 3,000 word-level	Morphological awareness	Attitude towards reading in English	Attitude English over Dutch
Vocabulary 3,000 word-level	1	.53**	.33**	.38**

Morphological awareness	.53**	1	.40**	.18
Attitude towards reading in English	.33**	.40**	1	.31*
Attitude English over Dutch	.38**	.18	.31*	1

*p = .001, ** p < .001

Attitude scales and vocabulary knowledge academic word-level

'Attitude English over Dutch' was a significant predictor (β = .30, *p* < .001) of the vocabulary knowledge of the academic word-level (table 7). When the attitude towards reading in English over reading in Dutch goes up, the percentage correct on the vocabulary academic word-level test goes up with .30 standard deviation, given that all other variables are kept constant. Additionally, a significant positive correlation was found between 'Attitude English over Dutch' and the vocabulary knowledge of the academic word-level (*r* (111) = .39, *p* < .001; table 9). The academic vocabulary knowledge increased with a more positive attitude towards reading in English over reading in Dutch, suggesting a causal relationship between attitude English over Dutch and the academic vocabulary.

'Attitude towards reading in English' did not show to be a significant predictor of vocabulary knowledge on an academic word-level (β = .03, *p* = .727; table 7). Contradictory, a significant positive correlation was found between vocabulary knowledge of academic words and 'Attitude towards reading in English' (*r* (111) = .30, *p* = .001; table 9). This suggests that e vocabulary knowledge of academic words increases with a more positive attitude towards reading in English, however causality cannot be inferred from these correlations.

Morphological awareness and academic vocabulary knowledge

Additionally, morphological awareness was shown to be a significant predictor of academic vocabulary knowledge (β = .45, p <.001). When the participant scores higher on the morphological awareness test, the vocabulary knowledge on academic word-level goes up with .45 standard deviation, given that all other variables are kept constant. Consequently, a significant positive correlation was found between morphological awareness and academic vocabulary knowledge (r (111) = .52, p < .001). The academic vocabulary knowledge increases with better morphological awareness.

Correlations between academic vocabulary knowledge, morphological awareness and attitude scales are displayed in table 9.

Table 9. Correlations (r) between academic vocabulary knowledge, morphological awareness, Attitude towards reading in English and Attitude English over Dutch (N = 111).

Variable	Academic vocabulary knowledge	Morphological awareness	Attitude towards reading in English	Attitude English over Dutch
Academic vocabulary knowledge	1	.53**	.33**	.38**
Morphological awareness	.53**	1	.40**	.18
Attitude towards reading in English	.33**	.40**	1	.31*
Attitude English over Dutch	.38**	.18	.31*	1

*p = .001, ** p < .001

Discussion and conclusion

This study aimed to provide insights into the English vocabulary knowledge of Dutch university students. Particularly, knowledge of the general English 3,000 word-level and academic word-level. Moreover, it investigated whether morphological awareness and attitude towards reading in English are predictors of Dutch students' English vocabulary knowledge. Sampling 111 Dutch students, a controlled productive vocabulary test (divided into general English and academic English), a morphological awareness test and a questionnaire were used in order to answer the three research questions this study aimed to answer. These were:

- Do Dutch students have a sufficient mastery of the most frequent words in English (3,000 word-level) and academic words?
- Is morphological awareness a predictor of English L2 vocabulary knowledge for Dutch university students?
- Is attitude towards reading in English a predictor of English L2 vocabulary knowledge for Dutch university students?

First, the most important findings to these research questions will be discussed in relationship with previous findings, then practical implications will be presented, followed by limitations and further suggestions for future research.

Vocabulary knowledge

Results show that participants scored an average of 78.5% correct on the 3,000 word-level and an average of 66.9% correct on the academic word-level. These average scores are relatively low, given that a minimum score of 85% correct on both general academic vocabulary and academic vocabulary indicates sufficient vocabulary knowledge at that level (cf. Laufer & Nation, 1999). On the 3,000 word-level vocabulary test, 63.1% of the participants scored below this critical line. Even more critical is the percentage of participants scoring below 85% correct on the academic vocabulary test. Results show that only 9.0% of the participants achieved an adequate score on the academic vocabulary test, leaving 91.0% percent scoring insufficiently. The difference in scores between those vocabulary categories is not surprising, since the words in the general

English vocabulary test belonged to the 3,000 most common words and academic words are less common and many belong to higher word-levels.

The results of the current study indicate that a minimum vocabulary score was reached for neither the general English knowledge, nor the academic English knowledge. This finding provides empirical evidence for an insufficient mastery of English vocabulary amongst Dutch university students. These results are reason for concern, since previous research stresses the importance of vocabulary knowledge in L2 language mastery (Astika, 1993; Laufer & Sim, 1985; Nation & Waring, 1997; Schmitt, 2010; Stahl, 1990). Moreover, vocabulary knowledge has shown to be a significant predictor of reading comprehension (Laufer & Aviad-Levitzky, 2017) and was shown to positively correlate with writing quality as well (Astika, 1993). Both skills are necessary and important components of academic studies. Reading comprehension has even shown to correlate with academic achievement (e.g. García-Madruga et al., 2014; Mol & Bus, 2011; Shaw & McMillion, 2011; Stoffelsma & Spooren, 2018; Stoffelsma et al., accepted). Therefore, the insufficient mastery of the English vocabulary might influence students' linguistic capacities and influence their academic achievement.

Especially the low score on academic English vocabulary is worrying, since participants were university students and encounter academic texts in English at least once a week. Furthermore, a lot of academic content is being presented in English and this amount is only expanding, due to internationalisation. In that regard, the current study provides relevant new information for the academic field of linguistics as well as for universities and language policy makers.

Given that receptive vocabulary knowledge is generally larger than productive knowledge (Laufer, 1998; Nizonkiza, 2016; Zhong & Hirsh, 2009) and the current study tested controlled productive vocabulary, different results might be found when a test aimed specifically at testing students' receptive vocabulary knowledge would be conducted. However, since students do not only need English (L2) vocabulary knowledge for reading purposes, but for writing as well (Astika, 1993), not only receptive vocabulary, but also productive vocabulary is essential for studying in English (L2).

These findings of insufficient (academic) English vocabulary knowledge, might explain findings of De Vos et al. (2019), who found that Dutch students studying psychology in their native

language outperformed their Dutch peers studying psychology through the medium of English as a second language. Thereby implying that academic achievement suffers from insufficient academic English language skills, including vocabulary knowledge, which stresses the gravity of the problem of insufficient English vocabulary knowledge even more.

Morphological awareness

Morphological awareness was shown to be a significant predictor for both general English vocabulary of the 3,000 word-level and academic vocabulary. These results are in line with the findings of Guo et al. (2011), who found structural relationships between vocabulary knowledge and morphological awareness in tertiary students who were native speakers of English. Regarding English L2 learners, similar results were found for both Turkish students learning English (Akbulut, 2017) and Ghanese students, studying in English as their L2 (Stoffelsma et al., accepted). Stoffelsma et al. (accepted) investigated the English L2 knowledge of students in Ghana and found morphological awareness to be affecting academic achievement directly and indirectly through vocabulary and reading comprehension. Results of the current research suggest possible similar patterns for Dutch university students, thereby advocating the importance of morphological awareness.

The contribution of the current study is important to the field of morphological research, as very few studies have investigated morphological awareness and related literacy skills at the level of university students. Studies that have investigated this relationship mainly targeted English L1 speakers (Carlisle, 2000; Guo et al., 2011; Singson et al., 2000; Wilson-Fowler & Apel, 2015). With the exceptions of Akbulut (2017) and Stoffelsma et al. (accepted), no other studies have investigated this relationship amongst university students in English L2 settings. Furthermore, morphological awareness of specifically Dutch university students has, to the best of my knowledge, never been investigated before, especially not in an English L2 context. Thereby, the current study advances the scientific understanding of morphological awareness at this particular level of education.

Attitude scales

A large majority (89.2%) of the students participating in this study reported to being asked to read a text in English for their studies at least once a week. This supports the importance of English in tertiary Education globally (Graddol, 2006).

Dutch students rated reading in English predominantly positive. However, more than half of the participants reported that they found reading textbooks in English more difficult than reading textbooks in Dutch. These findings are in line with previous studies showing that students think reading in their L1 takes less effort than reading in their L2 (Pecorari et al., 2012; Yamashita, 2007).

The indication that reading textbooks in English was perceived to be more difficult than reading textbooks in Dutch did not mean that participants preferred their textbooks to be in Dutch. Of the participants, a small majority (44.1%) would rather read a textbook in English than in Dutch. These findings are not in line with Pecorari et al.'s (2011) results in Sweden, where only 13% would choose their textbooks to be in English over Swedish. This difference might be explained by the moment in time when the study took place. The importance of English in educational settings has grown over the years, making it possible that nine years later, results could look differently. Furthermore, cross-cultural differences in response styles might have been partly responsible for differences as well. Research shows, for example, that Swedish participants show more extreme response styles than the Dutch (Harzing, 2006). Implicating that the Swedish participants might have tended more to either to the very negative or the very positive side of the scale, whereas Dutch participants rather chose options in the middle of the scale.

Students' attitudes towards reading in English over Dutch was shown to be a significant predictor for both their 3,000 word-level vocabulary knowledge and their academic vocabulary knowledge. This is consistent with the 'Cycle of Growth' (Nuttall, 2005), which does not only seem to apply to reading comprehension, but vocabulary knowledge as well. Students who have a larger vocabulary knowledge, are likely to use their word knowledge more (i.e. read, write, speak and listen more in English), develop more positive attitudes towards the language and consequently use their vocabulary more, which results in further vocabulary growth.

However, more broadly speaking, the general attitude towards reading in English did not show to be a significant predictor for neither vocabulary knowledge at the 3,000 word-level, nor at the academic word-level. This difference between the two attitude scales might be due to the kind of constructs that they measured. The English over Dutch attitude scale, measured whether students thought reading textbooks in English was more beneficial than reading textbooks in Dutch, whereas the general attitude towards reading in English was broader, talking about reading in English for courses in general. The latter was measured on a four-point scale, whereas the first was measured on a five-point scale, which might have influenced outcomes on the regression tests, even though both alphas were high. Future studies could investigate whether different results are found if scales with the same scoring type are used.

Nevertheless, a correlation was found between both attitude scales and both vocabulary knowledge levels. Future research could further investigate the relation between attitude towards reading in English and vocabulary knowledge. Which could include more in-depth research, by adding more items and question them on broader scales.

A strong correlation between reading proficiency and attitude towards reading has already been suggested by several researchers (Bastug, 2014; Martínez et al., 2008; McKenna et al, 1995). Reading comprehension in its turn has shown to be positively influenced by vocabulary knowledge (e.g. Laufer & Sim, 1985; Nation & Waring, 1997; Stahl, 1990). This study adds that, on top of those relations, attitudes related to reading in English and vocabulary knowledge are correlated as well.

Implications for educational improvement

Based on the results of this study, three possible implications for educational improvement can be suggested. First of all, English vocabulary development deserves more attention in Dutch educational practices. Paying special attention to the development of vocabulary knowledge on both general English level and in particular academic English level would be advisable. Therefore, integrating English vocabulary development into courses teaching students academic skills, such as reading academic texts, would be a desirable. This study is the first to start mapping the actual

English L2 vocabulary knowledge of Dutch university students, specifically targeting their academic English vocabulary knowledge in addition to their general English vocabulary knowledge. It provides empirical evidence for the insufficient levels of English vocabulary of Dutch university students, which is information that needs to be taken into consideration by language curriculum designers and Dutch universities.

As mentioned before, these findings that Dutch' students English L2 vocabulary knowledge is below mastery level might explain the findings of De Vos et al. (2019), who implied that academic achievement might suffer from insufficient academic language skills, including vocabulary knowledge. The transition that is happening, where courses are being thought in English rather than in Dutch at universities is probably irreversible. However, transitioning should happen with caution. It should be slow and constantly monitored, since otherwise students' literacy skills in English L2 might not be at the level that is needed to fully comprehend academic reading material. Studies such as the study by De Vos et al. (2019) and the current study should be considered in developing policy shifts regarding the process of offering more and more education in English.

Secondly, since morphological awareness was shown to be a significant predictor of vocabulary knowledge, exploring educational practices that focus on teaching students about morphology could be beneficial for students, even at tertiary level. However, in order to do so, Dutch students' morphological awareness has to be studied further. The current research lays out the first findings, but testing morphological awareness based on a more varied set of items and investigating multiple aspects of morphology, e.g. knowledge on different morphemes or knowledge on inflected forms of words, might map out educational needs more specifically. The more items, the more robust the data will be. However, the time the participant spends on the test has to be considered as well, since data will be less useful if taking the test costs too much time. Weighing the time the participant will spent on the test against the amount of measured constructs is therefore of importance for future research as well. As for the current research, since multiple constructs (e.g. two levels of vocabulary knowledge, morphological awareness and attitude) were tested, this consideration determined the choice for the number of items used to test specifically morphological awareness.

Lastly, the role of attitude towards reading should not be forgotten. The important role of attitude towards reading on reading comprehension has been stressed before (Bastug, 2014; Martínez et al., 2008; McKenna et al, 1995). Findings in the current study implicate once again the role of attitude towards reading, in particular in the vocabulary knowledge in English L2. Bastug (2014) already stated that students' reading attitudes should be taken into consideration in not only reading comprehension activities, but also in general academic achievement. The result that vocabulary knowledge correlates with reading attitude as well, supports that statement.

Motivating students to read by offering them a role-model that enjoys reading, such as a teacher, might help in increasing students' attitudes towards reading, as well as their time spent on reading in English and consequently support incidental word learning. Furthermore, offering feedback and supporting students in their reading behaviour might increase their attitude towards reading, since more feedback and support will help them read better, which will increase the enjoyment thereof, as is consistent with the 'Cycle of Growth' (Nuttall, 2005).

Limitations and suggestions for future research

In interpreting the results of the morphology items, it should be acknowledged that results may only be regarded as an indication of morphological awareness. Not all items of the test Wilson-Fowler and Apel (2015) developed were used. This study aimed to start exploring the morphological awareness of Dutch university students. Further research might look into this specific literacy skill in more detail. Such a study could test morphological awareness by asking participants to actively produce morphologically fitting words in a sentence, like the study of Stoffelsma et al. (accepted) uses in combination with vocabulary and reading items. Future studies could also specifically focus solely on morphological awareness and the different aspects of morphological awareness (e.g. knowledge of different morphemes, inflection, derivation or compound building) of Dutch students, since the current research is, to the best of my knowledge, the only research addressing that specific literacy skill targeting this group, more extensive research would be desirable.

Furthermore, the current study focusses on the vocabulary knowledge, morphological awareness and attitude towards reading at one specific moment in time. Future studies are advised to include longitudinal research, tracking a group of last-year middle school students through the period during which they study at university. This would not only provide the exploratory results that the current study offers, but would also allow assumptions to be made about whether and how vocabulary knowledge at the 3,000 word-level as well as knowledge of academic words evolve over time.

The mean scores on the academic vocabulary test were lower than on the 3,000 word-level vocabulary test. Given that the words on the AWL are not subject area dependent (Coxhead, 2000), future studies could focus on subject area specific words, testing whether Dutch students lack general academic vocabulary knowledge, or whether they lack knowledge of specific academic vocabulary knowledge from their field of study.

In addition to the attitude scales used in the current study, future research could focus on other constructs that can be linked to attitude. Those could be concepts known as affective factors in reading, which include for example self-concept, autonomy, anxiety (Athey, 1969). Those factors might impact how well participants score on tests, such as the one conducted in the current study.

References

Akbulut, F. (2017). Effects of morphological awareness on second language vocabulary knowledge. *Journal of Language and Linguistic Studies, 13*(1), 10-26.

Astika, G. G. (1993). Analytical Assessments Of Foreign Students' Writing. *RELC Journal, 24*(1), 61-70.

Athey, I. (1969, May). Reading: The affective domain reconceptualized. *Advances in reading/language   research.* Presented at the symposium of Theoretical Models and Processes of reading, New York.

Bastug, M. (2014). The structural relationship of reading attitude, reading comprehension and academic achievement. *International J. Soc. Sci. & Education, 4*(4), 931-946.

Bauer, L., & Nation, P. (1993). Word families. *International journal of Lexicography*, *6*(4), 253-279.

Bharuthram, S. (2012). Making a case for the teaching of reading across the curriculum in higher education. *South African Journal of Education, 32,* 205-214.

Bol, R. (2016, 15 November). Nederlanders beheersen Engels beter dan anderen die dat niet als moedertaal   hebben. *Volkskrant.*   Consulted   at   https://www.volkskrant.nl/nieuws-achtergrond/nederlanders-beheersen-engels-beter-dan-anderen-die-dat-niet-als-moedertaal-hebben~bf01c316/#:~:text=Nederlanders%20beheersen%20Engels %20beter%20dan%20anderen%20die%20dat%20niet%20als%20moedertaal% 20hebben,-Nederlanders%20beheersen%20het&text=Dat%20blijkt%20uit%20een% 20jaarlijks,twee   de%20of%20vreemde%20taal%20is.

Castles, A., Rastle, K., & Nation, K. (2018). Ending the Reading Wars: Reading Acquisition From Novice to Expert. *Psychological Science in the Public Interest, 19*(1), 5-51.

Carlisle, J. F. (2000). Awareness of the structure and meaning of morphologically complex words: Impact on reading. *Reading and Writing, 12,* 169-190. Doi: 10.1023/A:1008131926604

Chen, C., Chen, S., Chen, S. E., & Wey, S. (2013). The effects of extensive reading via e-books on tertiary level EFL students' reading attitude, reading comprehension and vocabulary. *TOJET: The Turkish Online Journal of Educational Technology, 12*(2), 303-312.

Coxhead, A. (2000). A new academic word list. *TESOL Quarterly, 34*(2), 213-238.

Edwards, A. (2014). The progressive aspect in the Netherlands and the ESL/EFL continuum. *World Englishes, 33*(2), 173-194.

European Commission. (2012). Europeans and their languages. Special Eurobarometer 386. Brussels. Accessed on 28 june 2020, from https://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs_386_en.pdf

Favreau, M., & Segalowitz, N. S. (1982). Second language reading in fluent bilinguals. *Applied Psycholinguistics, 3*, 329—341.

García-Madruga, J. A., Vila, J. O., Gómez-Veiga, I., Duque, G., & Elosúa, M. R. (2014). Executive processes, reading comprehension and academic achievement in 3th grade primary students. *Learning and individual differences*, *35*, 41-48.

Goulden, R., Nation, P., & Read, J. (1990). How large can a receptive vocabulary be? *Applied Linguistics, 11*(4), 341-363.

Graddol, D. (2006). English next. British Council. Latimer Trend & Company Ltd: Plymouth.

Guo, Y., Roehrig, A. D., & Williams, R. S. (2011). The Relation of Morphological Awareness and Syntactic Awareness to Adults' Reading Comprehension: Is Vocabulary Knowledge a Mediating Variable? *Journal of Literacy Research, 43*(2), 159-183.

Harzing, A. (2006). Response Styles in Cross-national Survey Research: A 26-country Study. *International Journal of Cross Cultural Management, 6* (2), 243-266.

Hu, M., & Nation, P. (2000). Unknown vocabulary density and reading comprehension. *Reading in a Foreign Language, 13*(1), 403-430.

Jeon, E. H. (2011). Contribution of morphological awareness to second-language reading comprehension. *The Modern Language Journal*, *95*(2), 217-235.

Kieffer, M. J., & Lesaux, N. K. (2008). The role of derivational morphology in the reading comprehension of Spanish-speaking English language learners. *Reading and Writing, 21*, 783-804.

Ku, Y., & Anderson, R. C. (2003). Development of morphological awareness in Chinese and English. *Reading and Writing: An Interdisciplinary Journal, 16*(5), 399-422.

Kuo, L., & Anderson, R. C. (2006). Morphological Awareness and learning to Read: A Cross-Language Perspective. *Educational Psychologist, 41*(3), 161-180. Doi: 10.1207/s15326985ep4103_3

Laufer, B. (1998). The Development of Passive and Active Vocabulary in a Second Language: Same or Different? *Applied linguistics, 19*(2), 255-271.

Laufer, B., & Aviad-Levitzky, T. (2017). What Type of Vocabulary Knowledge Predicts Reading Comprehension: Word Meaning Recall or Word Meaning Recognition? *The Modern Language Journal, 101*(4), 729-741. Doi: 10.1111/modl.12431

Laufer, B., & Goldstein, Z. (2004). Testing vocabulary knowledge: Size, Strength, and Computer Adaptiveness. *Language learning, 54*(3), 399-436.

Laufer, B., & Nation, I. S. P. (1999). A vocabulary-size test of controlled productive ability. *Language Testing, 16*(1), 33-51.

Laufer, B., & Sim, D. D. (1985). Measuring and explaining the reading threshold needed for English for academic purposes texts. *Foreign Language Annals, 18*(5), 405-411.

Lervag, A., & Aukrust, V. G. (2010). Vocabulary knowledge is a critical determinant of the difference in reading comprehension growth between first and second language learners. *Journal of Child Psychology and Psychiatry, 51*(5), 612-620.

Martinez, R. S., Aricak, O. T., & Jewell, J. (2008). Influence of reading attitude on reading achievement: a test of the temporal-interaction model. *Psychology in the Schools, 45*(10), 1010-1023.

Mol, S. E., & Bus, A. G. (2011). To Read or Not to Read. *Psychological Bulletin, 137*(2), 267–296. Doi: 10.1037/a0021890.

Mullis, I. V. S., Martin, M. O., Foy, P., & Hooper, M. (2017). PIRLS 2016 International Results in Reading. Retrieved from Boston College, TIMSS & PIRLS International Study Center website: http://timssandpirls.bc.edu/pirls2016/international-results/

McBride-Chang, C., Shu, H., Zhou, A., Wat, C. P. & Wagner, R. K. (2003). Morphological Awareness Uniquely Predicts Young Children's Chinese Character Recognition. Journal of Educational Psychology, 95(4), 743–751.

McKenna, M. C., Kear, D. J., & Ellsworth, R. A. (1995). Children's attitudes toward reading: a national survey. *Reading Research Quarterly, 30*(4), 934-956.

Nagy, W. E., Diakidoy, I. A. N., & Anderson, R. C. (1993). The acquisition of morphology: Learning the contribution of suffixes to the meanings of derivatives. *Journal of reading Behavior, 25*(2), 155-170.

Nation, I. S. P. (2006). How Large a Vocabulary is needed for Reading and Listening? *The Canadian Modern Language Review, 63*(1), 59-81. DOI: https://doi.org/10.1353/cml.2006.0049.

Nation, I.S.P. & Waring, R. (eds.). (1997) *Vocabulary size, text coverage and word lists*. Cambridge University Press: Cambridge.

Nizonkiza, D. (2016). First-year university students' receptive and productive use of academic vocabulary. *Stellenbosch Papers in Linguistics, 45*, 169-187. doi:10.5774/45-0-215

NOS (2016, 15 November). We rock! Nederlanders beheersen de Engelse taal het best. *NOS Nieuws.* Consulted at https://nos.nl/artikel/2143237-we-rock-nederlanders-beheersen-de-engelse-taal-het-best.html

Nuttall, C. (2005). *Teaching Reading Skills in a Foreign Language (3rd Edition)* (3rd ed.): Macmillan ELT.

Pecorari, D., Shaw, P., Malmström, H., & Irvine, A. (2011). English textbooks in parallel-language tertiary education. TESOL Quarterly, 45(2), 313–33.

Pecorari, D., Shaw, P., Irvine, A., Malström, H., & Mezek, S. (2012). Reading in tertiary education: undergraduate student practices and attitudes. Quality in Higher Education, 18(2), 235-256, DOI: 10.1080/13538322.2012.706464

Rastle, K., & Davis, M. H. (2008). Morphological decomposition based on the analysis of orthography. *Language and Cognitive Processes, 23*(7-8), 942-971. DOI: https://doi.org/10.1080/01690960802069730

Ridder, S. (1995). English in Dutch. *English Today, 11*(4), 44-50.

Schmitt, N. (2010). *Researching Vocabulary: A Vocabulary Research Manual.* Londen: Palgrave Macmillan.

Shaw, P., & McMillion, A. (2008). Proficiency effects and compensation in advanced second-language reading. Nordic Journal of English Studies, 7, 123-143.

Shaw, P., & McMillion, A. (2011). Components of success in academic reading tasks for Swedish students. *Iberica, 22*, *141-162.*

Stoffelsma, L., & Spooren, W. (2018). The Relationship Between English Reading Proficiency and Academic Achievement of First-Year Science and Mathematics Students in a Multilingual Context. *International Journal of Science and Maths Education, 17,* 905-922. *doi:10.1007/s10763-018-9905-z*

Stoffelsma, L., Spooren, W., Mwinlaaru, I.N., Antwi, V. (accepted). The morphology-vocabulary-reading mechanism and its effect on students' academic achievement in an English L2 context. *Journal of English for Academic Purposes.*

Singson, M., Mahony, D., & Mann, V. (2000). The relation between reading ability and morphological skills: Evidence from derivational suffixes. *Reading and Writing, 12,* 2190252. Doi: 10.1023/A:1008196330239

Stahl, S. A. (1990) Beyond the instrumentalist hypothesis: some relationships between word meanings and comprehension. *Technical report no. 505 of the Center for the Study of Reading,* University of Illinois at Urbana Champaign.

Taylor, R. T., & McAtee, R. (2003). Turning a new page to life and literacy. *Journal of Adolescent and Adult Literacy, 46,* 476-481.

De Vos, J. F., Schriefers, H., & Lemhöfer, K. (2019). Does study language (Dutch versus English) influence study success of Dutch and German students in the Netherlands? Manuscript submitted for publication.

Wächter, B., & Maiworm, F. (2008). *English-taught programmes in European higher education: The picture in 2007*. Report for the Academic Cooperation Association, Brussels. Bonn: Lemmens.

Wilson-Fowler, E. B., & Apel, K. (2015). Influence of Morphological Awareness on College Students' Literacy Skills: A Path Analytic Approach. *Journal of Literacy Research, 47*(3), 405-432.

Yamashita, J. (2007). The relationship of reading attitudes between L1 and L2: an investigation of adult EFL learners in Japan. *TESOL Quarterly, 41*(1), 81-105.

Zhong, H., & Hirsh, D. (2009). Vocabulary growth in an English as a foreign language context. *University of Sydney Papers in TESOL, 4*, 85–113.

Appendix: Questionnaire

Start of Block: Introduction

Dear participant,

Thank you for considering taking part in this study into the English language knowledge of Dutch university students. This study is conducted by Jetske van de Werff, student of the International Business Communication Master at Radboud University Nijmegen.

Participation in this study requires the answering of 36 vocabulary questions, 8 word knowledge questions and some questions about your reading behaviour and preferences. The questionnaire will take approximately 10 minutes to complete.

Confidentiality

The data collected in this study will be processed completely anonymously and saved in a secure manner according to the guidelines of Radboud University. They will be used in order to write a Master Thesis. The anonymised data can be retrieved at the discretion of the scientific community for at least 10 years.

Voluntariness

Participation to this study is completely voluntary. You can decide to stop your participation at any time. All your data will then be permanently deleted.

Further information

For further information about the research, you can contact Jetske van de Werff via e-mail: j.vandewerff@student.ru.nl.

Permission

 By proceeding with this questionnaire and clicking the red arrowed button below, you indicate that you:

 - Have read the information above;

 - Participate voluntarily;

 - Are 18 years or older;

 - Agree to the terms.

 Thank you in advance,

 Jetske van de Werff

End of Block: Introduction

Start of Block: Student yes/no

Are you currently a student at a Dutch university?

    ◯ Yes (1)

    ◯ No (2)

End of Block: Student yes/no

Start of Block: Vocabulary_v1

The first part of this questionnaire consists of 36 vocabulary questions.

Please complete the underlined words as in the following example:

He was riding a <u>bi   </u>.   --> He was riding a <u>bicycle</u>.

Please only type in the word that you completed, not the entire sentence.

1. They need to spend less on <u>adminis</u>_____ and more on production.

_____

2. He saw an <u>ang</u>_____ from Heaven.

_____

3. The entire <u>he</u>_____ of goats was killed.

_____

4. Two old men were sitting on a park <u>ben</u>_____ and talking.

_____

5. She always showed <u>char</u>_____ towards those who needed help.

_____

6. He had a big house in the Western <u>Prov</u>_____.

_____

7. Oh Harold <u>darl</u>_____, I am sorry. I did not mean to upset you.

_____

8. Judy found herself listening to the last <u>ec</u>_____ of her shoes on the hard floor.

_____

9. He cut three large <u>sli</u>_____ of bread.

_____

10. He sat in the shade beneath the pa_____ trees.

_____

11. He had a crazy sch_____ for perfecting the world.

_____

12. They get a big thr_____ out of car-racing.

_____

13. At the beginning of their journey they encoun_____ an English couple.

_____

14. Nothing illus_____ his selfishness more clearly than his behaviour to his wife.

_____

15. He grabbed the bag and tos_____ it into the bushes.

_____

16. Every year she looked forward to her ann_____ holiday.

_____

17. There is a defi_____ date for the wedding.

_____

18. His voice was loud and sav_____, and shocked them all to silence.

_____

19. The afflu_____ of the western world contrasts with the poverty in other parts.

_____

20. The book covers a series of isolated epis_____ from history.

_____

21. Farmers are introducing innova_____ that increase the productivity per worker.

_____

22. They are suffering from a vitamin defic_____.

_____

23. There is a short term oscill_____ of the share index.

_____

24. They had other means of acquiring wealth, pres_____, and power.

_____

25. The parts were arranged in an arrow-head configu_____.

_____

26. The learners were studying a long piece of written disco_____.

_____

27. People have proposed all kinds of hypot_____ about what these things are.

_____

28. The giver prefers to remain anony_____.

_____

29. The elephant is indig_____ to India.

_____

30. You'll need a mini_____ deposit of $20,000.

_____

31. Most towns have taken some eleme_____ civil defence precautions.

_____

32. The presentation was a series of sta_____ images.

_____

33. This action was necessary for the ulti_____ success of the revolution.

_____

34. He had been expe_____ from school for stealing.

_____

35. The lack of money depressed and frust_____ him.

_____

36. The money from fruit-picking was a suppl_____ to their regular income.

_____

End of Block: Vocabulary_v1

Start of Block: Vocabulary_v2

The first part of this questionnaire consists of 36 vocabulary questions.

Please complete the underlined words as in the following example:

He was riding a <u>bi   </u>.   --> He was riding a <u>bicycle</u>.

Please only type in the word that you completed, not the entire sentence.

1. I live in a small <u>apa   </u> on the second floor.

_____

2. The <u>pro   </u> of failing the test scared him and motivated him to study harder.

_____

3. Before writing the final version of her essay, the student wrote several <u>dra   </u>.

_____

4. The cart is pulled by an <u>o   </u>.

_____

5. Anthropologists study the <u>struc   </u> of ancient societies.

_____

6. Crying is a <u>nor   </u> response to pain.

_____

7. It was a cold day. There was such a <u>chi   </u> in the air.

_____

8. After two years in the Army, he was promoted to the rank of lieu_____.

_____

9. The statue is made of mar_____.

_____

10. In the olden days some aristocrats believed that blue blood flowed through their ve_____.

_____

11. The secretary was helpful and assi_____ the boss in organising the workshop.

_____

12. His beard was growing too long so he decided he needed to tr_____ it.

_____

13. People were whir_____ about on the dance floor in time to the music.

_____

14. He was on his knees, ple_____ for mercy.

_____

15. Be careful. You'll sn_____ that branch if you bend it back too far.

_____

16. I won't tell anybody. My lips are sea_____.

_____

17. The Emperor of China was the supr_____ ruler of his country.

_____

18. You must be <u>awa_____</u> that very few jobs are available.

_____

19. I've had my eyes tested and the optician says my <u>vi_____</u> is good.

_____

20. The <u>anom_____</u> of his position is that he is the chairman of the committee, but he isn't allowed to vote.

_____

21. In their geography class, the children are doing a special <u>pro_____</u> on China.

_____

22. In a free country, people are not discriminated against on the basis of colour, age or <u>s_____</u>.

_____

23. These modules should be taken in <u>seq_____</u> and not simultaneously.

_____

24. Despite the corrupt surroundings, the magistrate's principled behavior and his <u>int_____</u> were not affected.

_____

25. The job sounded interesting at first, but when he realized what it involved, his excitement <u>sub_____</u>.

_____

26. Governments often cut budgets in times of financial <u>cr_____</u>.

_____

27. The drug was introduced after medical res_____ indisputably proved its effectiveness.

_____

28. A true dem_____ should ensure equal rights and opportunities for all citizens.

_____

29. Research ind_____ that men find it easier to give up smoking than women.

_____

30. The airport is far away. If you want to en_____ that you catch your plane, you will have to leave early.

_____

31. In a lecture, a lecturer does most of the talking. In a tutorial students are expected to part_____ in the discussion.

_____

32. It's difficult to ass_____ a person's true knowledge with one or two tests only.

_____

33. The new coach's job was to res_____ the football team to its former glory.

_____

34. Even though the student did not do well on the mid-term exam, he got the highest mark in the fi_____.

_____

35. His decision to quit his job suddenly was not well thought out. It was not based on rat_____ considerations.

_____

36. The challenging job required a strong, successful and <u>dy_____</u> candidate.

_____

End of Block: Vocabulary_v2

Start of Block: Word knowledge

The second part of this questionnaire (8 questions) is about nonsense words. Even though you do not know what they mean (we made them up), you can still make sentences with them. Read the sentence and choose the nonsense word that best fits the sentence by ticking the right box.

For example:

Despite her knowledge, the _____ was unable to respond to the question.

A. Floxitize   B. Floxatism   C. Floxatist   D. Floxatation

1. Desert animals are not normally _____ .

○ commalianization (1)

○ commalious (2)

○ commalianism (3)

○ commalianize (4)

2. Please _____ these forms as soon as possible.

○ scribsumptist (1)

○ scribsumptious (2)

○ scribsumptian (3)

○ scribsumptize (4)

3. The meeting was highly _____ and invigorating.

○ loquarify (1)

○ loquarial (2)

○ loquarialize (3)

○ loquarialism (4)

4. Their progress was stopped by an unexpected _____.

○ postramify (1)

○ postramic (2)

○ postramity (3)

○ postramicize (4)

5. Their approach to the problem is deceptively _____.

○ torbatify (1)

○ torbative (2)

○ torbativize (3)

○ torbature (4)

6. The breeders _____ their stock every four generations.

○ genilify (1)

○ genility (2)

○ genilification (3)

○ geniliar (4)

7. Everyone resented the obvious _____ on the manager's part.

○ spectitious (1)

○ spectitionalize (2)

○ spection (3)

○ spectitive (4)

8. All the suspiciously _____ specimins are kept in a separate tank.

○ tribacize (1)

○ tribacion (2)

○ tribacism (3)

○ tribacious (4)

End of Block: Word knowledge_v2

Start of Block: Reading attitude

This is the last part of the questionnaire (4 questions). It is about your reading behaviour. Please tick the box with the answer of your choice.

1. How often do your university lecturers give you reading assignments in English, for your courses, such as reading textbooks or articles?

○ Never (1)

○ 1-2 times a week (2)

○ 3-4 times a week (3)

○ Every day (4)

2. How often do you read in English for enjoyment (for example stories or novels, magazines, newspapers, online-news websites)?

○ Every day or almost every day (1)

○ Once or twice a week (2)

○ Once or twice a month (3)

○ Never or almost never (4)

3. What do you think about reading in English (textbooks, articles, etc.) for your courses?

	Agree a lot (1)	Agree a little (2)	Disagree a little (3)	Disagree a lot (4)
I read only if I have to (1)	○	○	○	○
I think reading is boring (2)	○	○	○	○
I need to read well for my future (3)	○	○	○	○
I enjoy reading (4)	○	○	○	○

4. Indicate to what extend the statements about academic reading are true for you.

	Strongly disagree (1)	Disagree (2)	Neither agree/disagree (3)	Agree (4)	Strongly agree (5)
Reading a textbook in English requires more effort than reading in Dutch. (1)	○	○	○	○	○
If a textbook is in English, the language influences how well I understand it. (2)	○	○	○	○	○
If I could choose, I'd prefer to have textbooks in English rather than in Dutch. (3)	○	○	○	○	○

End of Block: Reading attitude

Start of Block: Demographic information

How old are you?

_____

What is your highest level of education?

○ vmbo (1)

○ havo (2)

○ vwo (3)

○ mbo (4)

○ hbo (5)

○ wo Bachelor (6)

○ wo Master (7)

In what year of your studies are you?

○ 1 (1)

○ 2 (2)

○ 3 (3)

○ 4 (4)

○ 5 (5)

○ 6 (6)

○ Other (7)

What is the name of your study programme?

_____

What is your gender?

    ○ Male (1)

    ○ Female (2)

    ○ Other (3)

    ○ I would rather not say (4)

What is your native language?

    ○ Dutch (1)

    ○ Other, namely: (2) _____

End of Block: Demographic information