Nicole Busby

Too cool for school?

Sources of English language acquisition, attitudes, and academic reading ability among Norwegian university students

Master's thesis in English Linguistics and Language Acquisition

Trondheim, May 2015

Supervisor: Anne Dahl

Norwegian University of Science and Technology

Faculty of Humanities

Department of Language and Literature

Abstract

Norwegians have some of the highest levels of English language proficiency in Europe (Bonnet, 2004), and are expected to read textbooks and articles in English at university. However, students may not be prepared for this, with some studies showing that two-thirds of Norwegian students entering university would not pass the language requirements of an English-speaking university (Hellekjær, 2005). This study aimed to investigate whether it was the style of the language used in academia that was causing this discrepancy, because, for the most part, Norwegians are exposed to English through the media and popular culture rather than academic studies. The study compared reading times, comprehension and vocabulary knowledge of Norwegian students with native English speaking students. It was found that Norwegian students are more likely to have a native speaker-like proficiency in general-language English proficiency than they are in academic language English, particularly with regard to vocabulary comprehension. Norwegian students also take significantly longer to read in English than native speakers do. Additionally, students were asked about their attitudes to and experiences of reading English. They reported feeling that English language media and popular culture were more important than school lessons as a source of their knowledge of English. They also reported that they found the style of writing was more important for ease of understanding than whether it was in English or Norwegian. The results from this study indicate that students may benefit from additional training in reading and understanding academic English.

Acknowledgements

Firstly, I would like to thank my supervisor, Dr Anne Dahl, for her encouragement and inspiration as well as helpful advice. Whenever I talked to her, I came away feeling inspired about language and keen to learn more.

I would also like to thank my friends and family for their support, advice and food. Many of them gave helpful feedback in the pilot testing stages of the study and helped with distribution of the survey. Thanks to Vegard Titlestad and David Nilsen for the hugs and the many cups of tea and for putting up with my alternating exclamations of glee and frustration. Special thanks to Kirsti Rawstron who not only helped with persuading Australian students that they wanted to help me to understand people on the other side of the world, but also read through my statistics and enthused about graphs. Huge thanks also to my mum, Cath Busby, and to Deanne Allan, who both read through the final drafts and provided many helpful comments and suggestions.

Last, but by no means least, I would like to express my gratitude to all the students who participated in my study. Despite not receiving any tangible reward, nearly 200 people generously gave up their time to answer some sometimes quite challenging questions for someone they didn't even know. The interest people seemed to have in the topic was wonderful to see, and I hope that the end result lived up to their expectations.

Contents

1 Introduction

The Scandinavian countries are renowned for having a high level of English proficiency and the majority of people living in the region speak English with fluency and confidence (Bonnet, 2004). Most appear to regard it as no problem to switch almost seamlessly between languages, and many do not even consider English a foreign language. Although English has no official status as a language in Norway, it is found in everything from movies, books, computer games, television programs, advertising, and even sporadically in Norwegian conversations. There have been suggestions that it is this extramural exposure to English, rather than anything unique to the official teaching methods, that sets Norway and the rest of Scandinavia apart from the rest of the world in English proficiency and leads to the positive and enthusiastic attitude to English in this part of the world.

English is ubiquitous within the Norwegian higher education system. Although the majority of lectures are conducted in Norwegian, at least at undergraduate level, much of the required reading, including textbooks and journal articles, is in English. Furthermore, the English texts that the Norwegian students are expected to read are identical to, or at least at the same level as, those found to be challenging by native English speakers. Although Norwegian students appear to be confident and comfortable conducting conversations in English (Bonnet, 2004), many seem to struggle with the required readings at university (Hellekjær, 2005), due both to the quantity they are expected to read in a second language and to the density and complexity of the texts prescribed. The type of English used in academia is very different to the English found in most movies or novels, and if this is where Norwegian students are learning a large part of their English, it is not surprising that they struggle with the academic English they encounter at university. Therefore, I wanted to test whether there is a difference between Norwegian students' understanding of regular conversational English and their understanding of academic English, and whether this is connected with the language input they are receiving.

This thesis will begin with an outline of why English is important in the modern world and how this has been changing over time, and then discuss more specifically the role it plays in education around the world. Some of the main differences between regular and academic

English will then be described, as well as ways of quantifying the degree to which language can be considered academic. There will also be a brief description of how second languages are acquired and coping strategies for reading in a second language. The example of English in Norway is then introduced, with discussion about the similarities and differences between Norwegian and English. Finally, the current study will be discussed: the methods and results will be described and this will be followed by a discussion about what the results mean for Norway and for the wider global community.

2 Background

2.1 English as a global language

Increased levels of globalisation have led to a need for a lingua franca to enable cross-cultural communication, and with the number of English speaking people growing at an exponential rate (Lysandrou & Lysandrou, 2003), English seems to be fulfilling this role (e.g. Baldvinsdóttir, 2011). Estimates vary on the number of people using English, but some say that at least a quarter of the world's population have some command of English (British Council, 2013; Lysandrou & Lysandrou, 2003), and it is used by more non-native speakers than native speakers (Mauranen, Hynninen, & Ranta, 2010). English is the most widely studied second language in the world and has an official status in more than 70 countries (Altbach, 2007). By 2020 it is estimated that two billion people will be using or learning to use it (British Council, 2013). There have been other lingua francas in the past – Latin, French and German have all played a role in facilitating international communications within Europe and beyond, but the current range and variety of English is unprecedented (Altbach, 2007; Dovring, 1997).

2.1.1 From humble beginnings

The spread of English is a relatively recent phenomenon. For most of its history, English has been little used outside the British Isles (Berns et al., 1994). British colonialism played an important role in the initial spread of English, with the language following British settlers around the world to places such as North America, Australia, New Zealand and India. The British taught English to the inhabitants of their colonies so they could understand the commands of the officers who had to maintain order (Kaplan, 2001). It was not until the 18th

century that it started to become known in mainland Europe, particularly in the Netherlands and France (Berns et al., 1994). By the 19th century, it had spread further and became well known in places such as Russia, Germany and Scandinavia (Berns et al., 1994). English gained a further foothold in Europe thanks to the American influence in ending the First World War, which was marked by the Treaty of Versailles being written in English as well as French, which had been the traditional language of diplomacy up to that point (Berns et al., 1994). After 1945, English became a part of secondary education, and then later also primary education, in many parts of Europe (Berns et al., 1994). British and American popular music, global trade, and the increasing use of English in the scientific world cemented its role within Europe (Berns et al., 1994).

The industrial revolution also contributed to the popularity and spread of English, with Britain leading the way in large-scale manufacturing and new technologies such as steam power (Fennell, 2001). Knowing English was the best way to access information about these new technologies. Other technologies had an even more direct role in the spread of English. The telegraph system used English because that was the language in which it was developed, and this set a standard for radio and telecommunications (Fennell, 2001). By the early 20th century, the United States, now home of 70% of native English speakers in the world, had emerged as a political and economic superpower and has been a strong influence in the spread of English through both technology and culture (Fennell, 2001).

In the modern world, knowing English is still the best way to keep up with developments in science, technology and popular culture. English has been designated one of the official languages of the European Union and is often the default language in meetings, both official and unofficial (Berns, 2009). International projects often adopt English as their lingua franca even if there are no native speakers involved (Mauranen et al., 2010), and many studies have found that higher English proficiency is correlated with higher wage earning (e.g. Tainer, 1988). In many parts of the world, English dominates the airwaves of radio and television (Dovring, 1997), and English-language music accounts for almost all of the most popular music in Europe (Legrand, 2012). Communication for international aircraft and shipping is also conducted in English (Fennell, 2001) and postal services around the world use it (Dovring, 1997).

Although English brings many benefits as a global lingua franca, its dominance as a global language is not without problems. Many have raised concerns that the growth of English will be the cause of death for many other languages, with some predicting that up to 90% of languages will disappear over the next century (Coleman, 2006). There has been a perception that English 'gains' from the death of other languages, and it has been portrayed as a 'killer language' (Coleman, 2006, p. 2). And although English serves an important purpose as a lingua franca, some have questioned the extent to which it really improves communication. With different people using the same language in different ways there is opportunity for misinterpretation, and 'the different undercurrents of diversified meanings risk dividing people rather than uniting them in the long run' (Dovring, 1997, p. 8). International English has so many differing uses and interpretations that it is 'not necessarily a contribution to peace or understanding' (Dovring, 1997, pp. 7-8). As a 'world language', English does not serve all of the world's citizens equally well (Phillipson, 2001).

2.1.2 Teaching English around the world

The 'growing global appetite for English' (Dovring, 1997, p. 23) has led to an entire industry of English language teaching around the world. Organisations that facilitate the teaching of English as a foreign language describe their role as being one of creating 'international opportunities' (British Council, 2015), specifically by improving career prospects, enabling cross-cultural communication, giving access to wider knowledge, and enabling greater understanding of popular culture (Oxford Royale Academy, 2014). Internationally, English teachers are in high demand, and many different organisations are involved in recruiting teachers and teaching or testing English. Teaching English has become 'a massive business' (Kaplan, 2001, p. 4). International students bring an economic benefit of £14 billion for the UK economy each year (British Council, 2015) and, in 2001, fees from international students in the US were equivalent to one-eleventh of the value of agricultural exports (Kaplan, 2001).

More countries are shifting to teaching a variety of subjects in English, which will result in an ever increasing demand for English teachers. For example, the Abu Dhabi Education Council has announced that teaching in some subjects, including secondary school mathematics and

science, will shift to English, and they are currently recruiting native English speakers to fill these teaching positions (Abu Dhabi Government, 2015). Even in countries where the teaching is conducted in the local language, the majority of academic journal articles are published in English (Swales, 1987; Van Leeuwen, Moed, Tijssen, Visser, & Van Raan, 2001; van Weijen, 2012), meaning that once students reach a stage in their education where independent research is required, English language reading is almost unavoidable.

2.1.3 Testing of English proficiency

Fees from international students have become an important source of revenue for universities (Bretag, 2007). In countries such as Australia, the proportion of government-derived funds directed towards teaching students is declining on a per-capita basis, so universities are now becoming dependent on international student fees and seek to recruit increasing numbers of students from other countries (Feast, 2002). Universities taking on international students have a responsibility to ensure that these students are capable of succeeding, which is why students from a non-English speaking background are required to provide proof of their English proficiency before admission to university.

There are many types of test used to measure English language proficiency. Two of the most popular are the International English Language Testing System (IELTS) and the Test of English as a Foreign Language (TOEFL). The IELTS is based in the United Kingdom and jointly owned by the University of Cambridge Local Examinations Syndicate, the British Council, and the International Development Program Education, Australia (Saville & Hawkey, 2004). More than 2.2 million IELTS tests are taken each year around the world with testing centres in over 140 countries (IELTS, n.d). Most candidates taking this test are applying for higher education positions in English-speaking universities (Saville & Hawkey, 2004) and the test is accepted as evidence of English proficiency by over 9,000 organisations worldwide (IELTS, n.d). The TOEFL is run by the Educational Testing Service, which is a US-based non-profit organisation, and is also accepted by over 9,000 organisations in over 130 countries (ETS, 2015). Both tests use a series of tasks which test English listening, reading, writing and speaking skills (ETS, 2015; IELTS, n.d; Saville & Hawkey, 2004). The IELTS listening test is based more on British and international English accents and the speaking test is conducted with trained, live examiners, whereas the TOEFL is based more on

North American accents and the speaking component is recorded by a computer and marked at a later date (Jennings & Robertson, 2015).

IELTS scores are a requirement for students from many non-native English speaking countries to obtain a study visa in countries such as Australia, and English-speaking universities (whether in native English-speaking countries or otherwise) typically require English proficiency scores (or equivalent English proficiency standards) as part of the admission process (Feast, 2002). The scores in the IELTS test range from 1 ('non-user') to 9 ('expert user'), based on the grades from the four parts of the test – reading, writing, speaking and listening (IELTS, n.d). As a guideline, at least 100 hours of intensive English language instruction is required to achieve each 0.5 band on the IELTS score (Bretag, 2007). The minimum IELTS score for entrance to university is usually 6 ('competent user'), although some universities require higher scores for particular programs and postgraduate study (Feast, 2002). According to the IELTS descriptions for the levels, a score of 6 means the user 'has generally effective command of the language despite some inaccuracies, inappropriacies and misunderstandings [and] can use and understand fairly complex language, particularly in familiar situations.' (IELTS, n.d).

There is some doubt as to whether the level of English proficiency required for admission into English speaking universities is sufficiently high. In the IELTS handbook, the recommendations for academic courses is that a score of 6 means 'English study needed', and a minimum of 7.5 is deemed 'acceptable' for linguistically demanding academic courses (IELTS, 2007). Since each band level takes so many hours of instruction to achieve, a great deal of additional support would be needed by international students who are accepted into English-speaking universities on the basis of meeting minimum language proficiency requirements (Bretag, 2007).

Students who meet the English language admission requirements of the university have expectations that their level of English will be sufficient for studying in English. These expectations, however, are not always realised. Academics are finding that the work submitted by some international students, although seeming to demonstrate some

understanding of the content of courses, is difficult to mark because it is written in 'virtually incomprehensible English' (Bretag, 2007, p. 14). This causes some degree of discomfort among university staff (Feast, 2002). If they mark the work of these students to the same standard as the local students, many of the international students would fail, despite having met the admission requirements of the university (Bretag, 2007). The alternative is to mark international students according to a different set of criteria, which would then threaten academic integrity (Bretag, 2007). The discrepancy between the stated admission requirements and the actual expectations of the university means that students may not be prepared for university work and face difficulties and possible failure as a result (Coley, 1999).

It makes intuitive sense that for students to be successful in their studies, they need a certain level of proficiency in the language in which they are studying. Therefore it might be expected that higher scores on language proficiency measures would be correlated with higher levels of academic achievement. This connection between language proficiency and academic success seems to be reflected in the research overall, although many other factors such as attitude and motivation, age, academic background, and support also have important roles to play (Feast, 2002).

Kerstjens and Nery (2000) found a significant correlation between academic performance and IELTS scores for international students in an Australian university, which was strongest for the reading test scores. They did not find a significant effect for listening comprehension scores, but students and staff interviewed for the project highlighted the importance of listening skills. Lee and Greene (2007) compared English proficiency scores and grade point average (GPA) for 100 students at a large public university in the United States. They found almost no correlation when looking at the quantitative data alone, but interviews with students and faculty members indicated a definite link between language proficiency and academic learning and achievement. After a review of many studies, Graham (1987) concluded that the lower a student's language proficiency, the more it is likely to impact a student's academic success.

The degree of correlation also depends on which measures are used. Hill, Storch, and Lynch (1999) found a moderately strong correlation between IELTS scores and GPA, but a relatively weak correlation between GPA and TOEFL scores. Although quantitative studies do not always show a clear connection between language proficiency and academic success as measured by grades, 'nobody would argue that ELP [English Language Proficiency] has no role to play in academic achievement' (Hill et al., 1999, p. 72).

Some English-speaking universities offer additional English assistance to students using English as a second language and some of these courses are specifically designed for an area of study. For example, the Australian National University offers a course called English in a Legal Context which is aimed at first year law students who have English as a second language and is designed to 'address and overcome any issues or problems they are experiencing with their legal studies as a result of their lack of English language background' (ANU, 2015). This course is not compulsory, but completion of the unit offers additional reading time on end-of-semester exams. This indicates a recognition of the additional challenges faced by students studying in a second language and attempts to redress the balance somewhat.

2.1.4 Support for students in non-English speaking countries

When it comes to tackling academic English in countries where English is not the local language, English support courses are not always offered, even though much of the required reading and some of the teaching may be in English. At the University of Iceland, where approximately 90% of the textbooks are in English (Arnbjörnsdóttir & Prinz, 2013), there is no additional English language support for students (Tovazzi, 2011), even though poor English proficiency has been attributed as a cause of high drop-out rates in the first year of university (Berman, 2011). Tovazzi (2011) found that 92% of the Icelandic students surveyed felt that an English language support course would be useful to students, and 74% said they would take part in such a course if it were offered. In Sweden, Gunnarsson (2001) suggests that the combination of new knowledge, difficult text and foreign language can be too great for many students faced with reading English and results in an incomplete understanding of the material. She recommends that students should receive additional training in reading academic English texts, with special emphasis on vocabulary.

Although English is a global language and is increasingly being taught all over the world, the impact this has on educational policies and practices has not been investigated in any systematic way (Nunan, 2003). There appears to be a trend for teaching English at a younger age, but often without adequate teacher training or age-appropriate curricula, and adults are also increasingly expected to improve their English skills in order to further their careers (Nunan, 2003). There is also a trend for English teaching by people with little to no teaching experience and who are employed in various parts of the world, especially Asia, purely on the grounds that they are native English speakers (Kaplan, 2001).

Nunan (2003) conducted a study of English teaching in seven South-East Asian countries: China, Hong Kong, Japan, Korea, Malaysia, Taiwan and Vietnam. He found that all countries except Japan started teaching English in primary school, and that the age of initial English learning has been shifting downwards over the years, reflecting the assumption that the younger that children start learning languages, the more proficient they become. There are also economic divides in access to English, with wealthier areas receiving more and higher quality instruction, which then further cements the divide. The teaching of English in public-sector institutions was seen as inadequate by informants interviewed in all countries in the survey. Additional private instruction was seen by many as the only way to learn English, which is again an option available only to wealthier families. Underqualified or unqualified teachers were also seen as a major concern.

2.2 English in academia

There has been an ever present need in academia for a lingua franca to communicate ideas and discoveries across cultures. In the middle ages, Latin was used by networks of scholars across Europe (Mauranen et al., 2010), encouraged by the Roman Catholic church (Altbach, 2007). Changes in religion and national identity around the time of the Protestant reformation saw an increase in the use of national languages in place of Latin, and German became the main language of scientific communication until the 1930s (Altbach, 2007). Following the Second World War, English took over as the main language of academic communication and publication, and it is now increasingly the main language of instruction in higher education

institutions in continental Europe and elsewhere (Björkman, 2011; Gunnarsson, 2001; Mauranen et al., 2010). Nations using English have become 'academic superpowers' (Altbach, 2007, p. 3608), particularly the United States, which is the home of almost half of the research and development funding in the world as well as a large proportion of the world's top universities (Altbach, 2007).

This shift towards English language teaching at universities stems from a number of factors arising from its use as a lingua franca in the worlds of academia and business. Higher education institutions use English language teaching to attract international students and facilitate cultural and academic exchange (Vang, 2013). The use of English at tertiary institutions is also an acknowledgement of the fact that students will likely need to use English as an international communication tool in their future careers, and therefore it is beneficial for them to improve their English language skills, particularly in their specialised field of study (Pecorari, Shaw, Malmström, & Irvine, 2011). There is also a perceived level of prestige associated with teaching in English and some universities have specialised English-language courses targeted at high-achieving students (Pecorari et al., 2011).

In many countries, the use of English in teaching also has a more pragmatic origin. The majority of research articles and publications used by university students are written in English, and in countries with smaller populations there is little financial incentive to translate these texts, especially for more specialised subjects with fewer students (Pecorari et al., 2011). Even when the reading material can be translated, the original English language texts tend to be preferred, especially by teachers, because their higher market share means they usually have higher production values, more regular updating, careful editing and more support material available than the local versions (Pecorari et al., 2011). Given the costs of translation, and lower printing costs associated with printing in large numbers, English language textbooks are also likely to be cheaper (Hatlevik & Norgård, 2001) and therefore more popular with students as well.

The research paper written in English is 'the standard product of the knowledge-manufacturing industry' (Swales, 1987, p. 42). English is the undisputed language of science

and technology internationally (Nunan, 2003). Nearly 30 years ago it was estimated that at least half of research papers published were written in English, and this proportion was increasing rapidly (Swales, 1987). In 2012, approximately 80% of the journals indexed on Scopus (the largest abstract and citation database of peer-reviewed literature) were published in English (van Weijen, 2012). English is particularly prevalent in the science publishing community. Even in 1998, over 95% of journals listed in the Science Citation index were published in English (Van Leeuwen et al., 2001).

In order to write in English to a standard that is acceptable for publication, non-native English speaking researchers need to spend more time on developing their English language skills (Swales, 1987) and there are concerns that non-native speakers will never be able to express themselves as clearly as they would in their own language (Gunnarsson, 2001). Swales (1987) claims that this Anglo-centric research environment creates a bias that favours native English speakers and that there are well qualified and trained researchers who are 'quasi-invisible' (p. 43) because they do not demonstrate the required level of English proficiency. A study of international graduate students in the United States found that a large number felt disadvantaged because they were not native English speakers (Tardy, 2004).

There are many who are concerned about the way English is dominating the academic world and worry that it may be to the detriment of other languages (e.g. Altbach, 2007; Brock-Utne, 2001). For example, there are no universities in Africa that offer instruction in any indigenous language (Altbach, 2007), and even prominent languages like Arabic are being passed up in favour of English in secondary school education (Abu Dhabi Government, 2015). Around the world, governments enthusiastically welcome English into their academic system 'as a means of internationalising, competing, and becoming "world class"' (Altbach, 2007, p. 3608). Academic journals are, in almost all cases, owned and edited by academics in the main English-speaking countries, which means that the interests and agendas of the editorial board, as well as the majority of readers, dominate in deciding which research gets published (Altbach, 2007). Universities around the world put great pressure on their academics to publish in international (i.e. usually English-language) journals. In Norway, financial rewards are given to academics who publish in internationally-recognised English-language journals,

while their colleagues who publish in Norwegian receive less or no additional funding (Altbach, 2007; Brock-Utne, 2001).

In places where more than one language or variety of a language exist simultaneously in the same language community, and where one has higher prestige than the other, the situation can be said to be that of diglossia (Ljosland, 2007). The fact that English is so widely used in high status domains in many communities and is so essential for international communication has led scholars to propose that national languages are becoming subordinate to English in some cases (Berg, Hult, & King, 2001). For example, if English is essential for higher education and is the main language of research and learning, there is the potential for English to be the language of the educated elite and other languages may come to be considered to be lower status as a result (Coleman, 2006). There is concern that, with the spread of English, the world may ultimately become diglossic, with one language for local communication, culture and expression of identity and another – English – for more formal and official communication, and that this will lead to the slow death of other languages over time (Coleman, 2006).

The use of a common language can disguise cultural differences. Written expression varies between cultures and these differences may remain even when the language is changed, which can lead to misunderstanding. Gunnarsson (2001) noted that Swedish researchers tended to write research papers in a different style from their American colleagues, even though both were writing in English. Clyne (1987) points out that in the German tradition it is the reader's responsibility to make sense of the text, as compared to the traditional Anglo writing style in which it is the writer's responsibility to make it easy to read. Articles written by scholars from other cultures may be seen as vague or lacking in scientific rigour or stringency by readers from an Anglo-American background (Gunnarsson, 2001). Differences in writing style may not only affect which articles get published, but also how they are perceived by readers, with writing styles affecting how much credit is given to the information itself.

2.3 The challenges of studying in a second language

Vocabulary knowledge is one of the many factors that affect reading ability. Struggling to read a text because many of the words are unknown will make the experience of reading less enjoyable and may decrease the likelihood that the reader will continue. From examining unsimplified short novels, Hirsch and Nation (1992) propose that readers need to understand 98% of the words they read in a text in order to enjoy reading it. They calculate that this means a reader would need a vocabulary of around 5000 word families in order to read comfortably. A word family is defined as the base form of a word plus its inflected forms, including verb endings, plural *-s*, comparative *-er*, and superlative *-est*, as well as derived forms which are made using affixes such as *-able*, *-er*, *-ish*, *-ism*, *-ly*, *-less*. Simplified novels tend to be designed to be read by someone with a vocabulary of 2000 word families, so a significant increase in vocabulary is required to progress from these to unsimplified texts (Hirsch & Nation, 1992). They suggest that the best way to approach texts with many unknown words is to target vocabulary learning at the words that appear most often, rather than memorising every unfamiliar word.

Other studies have also suggested that there is a threshold of vocabulary knowledge that enables successful second language reading. Laufer (1992) set out to determine whether it was insufficient knowledge of a second language (L2) or a more general reading problem that was causing students to struggle with reading. She investigated this by looking at the English proficiency of first-year Israeli university students who spoke Arabic or Hebrew as their first language (L1). She compared the results of a test to measure their English vocabulary size with one measuring their L2 reading comprehension. She found that there was a threshold of around 3000 word families required to facilitate reading comprehension in the second language, below which even the best readers will not be able to cope. A vocabulary of 5000 word families appeared to guarantee reading success regardless of a student's general reading ability. From this she concluded that vocabulary is the most important aspect of teaching a foreign language, and therefore should be the focus of foreign language instruction.

Other studies of L2 reading place less emphasis on vocabulary, and some have not been able to show a significant link between smaller vocabulary scores and reading competence (Shaw & McMillion, 2011). Nergis (2013) found that for Turkish students reading in English,

syntactic awareness was a far more important predictor of reading success than vocabulary. The strongest predictor for L2 reading comprehension was metacognitive reading strategies. However, the students tested were already fairly proficient users of English, so this might indicate that once a particular vocabulary threshold is reached, further expansion of vocabulary knowledge plays a less important role in reading comprehension than other factors.

It appears that once L2 readers are over a vocabulary threshold, reading comprehension is achievable, but reading speed may still be slower than for native speakers (e.g. Fraser, 2007). Shaw and McMillion (2008) tested the English reading comprehension of Swedish and British students using texts aimed at educated readers, such as extracts from *The Economist* and *The Guardian*. They found that people reading in their first language (L1) performed better on tests where time was limited, but no significant differences were found when the same test was taken without the time restrictions. Shaw and McMillion (2011) also found that L2 readers do reach levels of comprehension similar to that of L1 readers, but that it takes significantly longer. The study found that Swedish students reading in English were less than 75% as efficient as L1 readers of the same texts, meaning they could be at a significant disadvantage when assigned the same textbooks at university, but not allocated more time to compensate.

Many students faced with reading in a second language need to devote more time to reading in order to compensate for slower reading rate. Pecorari et al (2011) conducted a study of Swedish students and their attitudes to studying in English. They found that the majority (55%) of the students they surveyed said they spent more time reading when textbooks were in English because they felt that reading in English was more demanding than reading in their L1. In the same study, 25% of the students said that they spent the same amount of time reading regardless of whether the material was in English or Swedish. Even with the extra time devoted to reading, they are likely still getting through less of the material as L2 reading is usually slower than L1 (Fraser, 2007; Shaw & McMillion, 2008), but for students who did not allocate additional time, there are concerns that they might be missing even more of the material. Many students in Pecorari et al's (2011) study indicated that they felt they understood less of the material when reading in English than they would have if it had been

written in Swedish, and many expressed frustration about this. A number commented that they felt that English was a barrier to their academic success, although others admitted that they could see advantages to studying in English such as vocabulary acquisition.

Reading speed does not appear to be entirely dependent on proficiency. Fraser (2007) found that processing speed was slower for L2 readers than people reading in an L1, even when they showed high levels of L2 proficiency. The faster L1 reading may be explained by more automated decoding, which requires less attention, thereby enabling more cognitive capacity to be used for higher processing (studies cited in Shaw & McMillion, 2011). This is consistent with studies showing that L2 users are slower to process individual words out of context (Shaw & McMillion, 2008). For the L2 reader, factors such as reading strategies also appear to be important (Fraser, 2007).

The extra challenge posed by reading in a second language can result in negative feelings towards studying. In a survey of Swedish students, 74% said they found reading in English (the L2) took more effort than reading in their first language (Pecorari et al., 2011). Students who are faced with reading in a language in which they are less proficient may react in a number of ways. If they perceive the task to be insurmountable, they may avoid reading altogether (Ward, 2001), or be more reluctant to read. Any strategy that results in reduced reading will obviously be counter-productive to progressing in academic studies, so research is needed to determine the effect that L2 reading has on student behaviour (Pecorari et al., 2011).

One strategy for coping with unknown words is to guess the meaning from the context. Nagy, Herman, and Anderson (1985) conducted a study to see how successful this strategy was among L1 readers. They asked eighth-grade students to read a 1,000-word text suitable for their age group and to complete some vocabulary assessment tests, including a checklist (which included a variety of non-words) to identify words that were familiar to them and a multiple-choice test and an interview relating to word meaning. They found that the odds of learning a word after only a single exposure were 10 to 15%. As the authors point out, children can be exposed to many new words in the course of daily life, so even with low

odds, significant gains in vocabulary can be made with low exposure to new words. In many cases, children may also be exposed to a given word multiple times and in multiple contexts, making the chances of determining the word's meaning higher.

Context can also be helpful to L2 learners in expanding vocabulary size. Ittzes (1991) conducted a study with 17-year-old Hungarian students who were learning English, which is unrelated to their native language. The students were shown a list of words and phrases taken from the glossary in an English textbook (which implied that they were not expected to know the words already) and asked to guess the meaning. Later they were shown the same words in the context of a story. The words and phrases that were shown in context were much more likely to be guessed correctly. Students were not able to infer meaning from their native language because of the dissimilarity between English and Hungarian. The words that were correctly guessed most often had a common origin in Latin. It was also shown that context helps better pupils significantly more than it does weaker ones, which could be related to having a larger vocabulary to build on, as L2 learners seem to pick up fewer words from context than native speakers (Laufer, 2000).

Reading comprehension skills appear to transfer from L1 to L2 reading. Cummins' (1979) interdependence theory proposes that children must first develop language skills adequately before they can benefit from learning a second language. This is likely to be the case for adults as well, with higher L1 literacy levels shown to lead to improved development of second language processes (Bernhardt, 2005). A number of studies have shown that readers with higher reading proficiency in their first language also show higher proficiency in their second language. Royer and Carlo (1991) found that reading skills among L1 Spanish-speaking year 6 students transferred to reading skills in the students' L2 (English). Olsen (1999) found more cross-linguistic interference for Norwegian students who were less proficient in their L1 when they were writing in English (their L2). Therefore, it is important to ensure thorough development of L1 skills in order to ensure success in L2 (Cummins, 1979).

Simply learning to communicate in a second language may not be sufficient for academic success in that language. Language skills can be separated into 'basic interpersonal communicative skills' (BICS), which are developed early and include factors such as oral fluency and accent, and 'cognitive/academic language proficiency' (CALP), which develops through exposure to the education system and is necessary for academic success (Cummins, 1980, 2008). CALP is different from natural language and cannot be measured by the same methods as natural language progression (Cummins, 1980). As Bialystok, Luk, Peets, and Yang (2010, p. 1) point out, 'there is a crucial difference… between the vocabulary available for conversational uses of language and the vocabulary that is the basis for the language of schooling'. When learning a second language, BICS and CALP often develop at different rates. Hakuta, Butler, and Witt (2000) found it took primary school students who were learning English as a second language 3 to 5 years to learn BICS in English and 4 to 7 years to develop academic (CALP) English.

Studies have found gender differences in English proficiency. Bonnet (2004) found that 16 year old girls in a variety of European countries scored significantly higher on tests of written production and linguistic competency than boys of the same age. However, some studies showed males to have more confidence in their English proficiency than females (Tardy, 2004; Tovazzi, 2011). Sundqvist (2009) found that Swedish year 9 boys spent more time engaged in English mediated activities than girls and Henry (2014) found that boys were more likely that girls to attribute their English learning to extramural sources such as digital games than girls were. Henry (2014) proposes that if boys believe they are able to learn English simply by playing digital games, they are less likely to exert themselves in the classroom. This could account for the gender gap seen in Sweden and other parts of the world.

2.3.1 The role of cognates and language similarity

Sometimes words can be similar across languages, for example when languages share a common ancestry, or when words are borrowed from another language. These are known as cognates, defined as 'translation equivalents that are similar in sound and spelling' (Schelletter, 2002, p. 93). Cognates have been shown to be translated faster than non-cognates (Kroll & Stewart, 1994), and can assist with translation in both children and adults

and for both bilinguals and L2 learners (Schelletter, 2002). Bilinguals are able to read cognates faster than non-cognates (Dijkstra, Grainger, & van Heuven, 1999). Studies on bilingual children during the process of language development have also found that words that are cognates between the two languages are used more frequently (Schelletter, 2002). Adult bilinguals were also found to use cognates more frequently and were more likely than monolinguals to perceive a higher frequency of cognate words in the language generally when asked to perform frequency rating tasks for words (Sherkina-Lieber, 2004). This suggests that cognates may be seen by bilinguals or L2 users as the 'same word' in both languages, which may help them process these words more easily.

When it comes to learning a second language, words that are similar to those you already know in your own language are easier to learn in a second language than words that are unfamiliar. For Hungarian students trying to guess English words alone or in the context of a passage of text, the words that were cognates between the two languages gave the highest chance of success (Ittzes, 1991). French-speaking children learnt English faster when there was a focus on French-English cognates (White & Horst, 2012). When Lindgren and Muñoz (2013) investigated the factors that contributed to 10- and 11-year-old children's success in learning a foreign language across seven European countries, they found that cognate linguistic distance was the strongest predictor of scores on both reading and listening tests.

Language similarity was also shown to be useful in learning new vocabulary. d'Ydewalle and Van de Poel (1999) measured language acquisition among Dutch-speaking children after exposure to Danish (which is related to Dutch) and French (which is in a different language family). The children acquired significantly more Danish vocabulary than French from the same amount of exposure. Van der Slik (2010) investigated the extent to which the characteristics of the mother tongue affected immigrants' ability to learn Dutch. It was found that language similarity and the proportion of cognates were the best predictors of language acquisition.

Word form similarity can also be a source of confusion when there is no, or limited, translation equivalence. Dijkstra et al. (1999) found that while bilinguals were faster to

recognise cognates, they took more time to recognise homographs (which looked the same but had a different meaning) and made more errors than they did with cognates or controls. Hungarian students trying to guess the meaning of English words were sometimes misled by similarities to Hungarian words (Ittzes, 1991).

Understanding the origins of a word can help with understanding, and one of the key characteristics of good readers is their ability to recognise words with speed and efficiency (Nagy, Anderson, Schommer, Scott, & Stallman, 1989). Studies have shown that the frequency of words or the families to which they belong affects how quickly they are recognised and understood by readers (Nagy et al., 1989). The similarity to familiar words can also help with the recognition of words and their meanings. Bergman, Hudson, and Eling (1988) tested reaction times of word recognition for morphologically complex Germanic- and Latin-origin words on Dutch speakers. They found that the words of Germanic origin were recognised faster than the Latin-based words, which they attribute to the language similarity between German and Dutch. Although the words from each group were rare in everyday language, the familiarity of language and associated concepts helped with word recognition.

2.3.2 Sources of information about English

Language exposure outside the classroom can make an important contribution to second language acquisition (Henry, 2014; Pearson, 2004; Sundqvist, 2009). According to Krashen's (1982) Input Hypothesis, language acquisition takes place when learners are exposed to comprehensible input that is one step beyond their present stage of linguistic competence. Therefore, to benefit from language exposure, learners must find sources that are at the right level. Studies have found that exposure to an L2 outside the classroom is associated with faster language acquisition (e.g. Sundqvist, 2009). The wealth of information in English, including movies, games, television programs, books and websites available in English, means that the chances are high that learners will find information appropriate to their level of knowledge (Henry, 2014). In most parts of the world, the foreign language that people are exposed to most commonly is English. Therefore, although the examples given in the following section are not always specifically about English, the findings can be generalised to a large extent to learners of English.

2.3.2.1 Television and film

Watching television programs and movies from other countries is one way in which people are exposed to foreign languages. In order for the viewing audience to understand the content, some form of translation needs to take place. For larger language communities, dubbing (replacing the original soundtrack with a version in the local language) is a popular option, but for smaller language populations, subtitling is more cost-effective (d'Ydewalle & Van de Poel, 1999). Because viewers are receiving simultaneous information from the sound in the foreign language and the translation in the subtitles, subtitled media have been proposed as an aid to second language acquisition (d'Ydewalle & Van de Poel, 1999). It has been shown that watching videos in a foreign language with captions is more effective for language learning than watching videos without captions (Winke, Gass, & Sydorenko, 2010). In countries with a tradition of subtitling, many people report that their knowledge of a second language (usually English) is close to their proficiency in their mother tongue, while for countries with a tradition of dubbing, self-reported second language proficiencies are much lower (MCG Media Consulting Group, 2009).

Watching foreign television programs or movies with subtitles has been shown to have many benefits for those learning a second language. Above all, it enables learners to hear native speakers using the language naturally and in context. This exposes them to different accents, dialects, slang words and expressions that they may not be able to learn from one teacher in a traditional didactic classroom setting (Díaz Cintas & Fernández Cruz, 2008; King, 2002). They can also gain knowledge of different registers and expressions and the contexts in which these are appropriate (Díaz Cintas & Fernández Cruz, 2008). Subtitled films can also motivate students to learn, help them with learning pronunciation, and introduce them to new vocabulary and phrases (King, 2002).

d'Ydewalle and Van de Poel (1999) tested whether Dutch-speaking Belgian children in grades 3 to 6 were able to learn foreign language vocabulary, syntax or morphology from a ten-minute film which was subtitled in their native language but had a soundtrack in the target language, which was either French or Danish. It was found that there was a positive effect for learning Danish, which is linguistically similar to Dutch, but not for learning French, which comes from a different language family. The researchers conclude that this

supports the facilitation hypothesis, in which similarity between the L1 and L2 facilitates transfer of knowledge from one language to the other, although the effect was mostly limited to vocabulary. They also found that children benefited more from being exposed to the foreign language in the soundtrack, whereas adults learned more when the subtitles were in the foreign language.

Even un-subtitled television in an L2 may be helpful in language acquisition simply due to greater exposure to the language. Sorescu-Marinkovic (2010) looked at Romanian citizens who watched Serbian television during the communist regime in the 1980s when, in an attempt to find entertainment, they tuned into television stations broadcast from neighbouring states. Despite the languages being unrelated and the fact that there were no subtitles to help explain what they were watching, the participants in this study demonstrated a remarkable knowledge of the Serbian language even 20 years after the exposure. The enormous popularity of these programs within the community may have encouraged continued watching even when the language was difficult to understand.

2.3.2.2 Books and magazines

Books, newspapers and magazines can be an excellent source of information for language learners and, because the reader controls the pace, there are more opportunities to look up unfamiliar words and re-read sentences to ensure understanding. For children learning a first language, books have been shown to be very important in increasing vocabulary knowledge and reading books has been linked to academic achievement overall (Anderson, Wilson, & Fielding, 1988). Reading can also help learners of a second language (Krashen, 1989). A study of Japanese high school and university students learning English tested whether reading could be used to increase vocabulary size in the target language (Day, Omura, & Hiramatsu, 1992). They found that students who read a text containing new vocabulary items scored higher on subsequent vocabulary tests than students who completed the vocabulary test without reading the text, even though they were not able to look up the meaning of the words during reading. Day et al. (1992) conclude that second language learners can learn new words simply by reading.

Other studies have investigated whether second language proficiency is correlated with L2 reading outside the classroom. Pearson (2004) conducted a study of Chinese university students undertaking a class on English for academic purposes in New Zealand. Using language diaries and interviews, he found that reading books, magazines or newspapers was important to the majority of these students in learning English. A study of Swedish year 9 students by Sundqvist (2009) showed that reading books, magazines and newspapers was the best predictor of oral English production and was also the only extramural English activity that was significantly correlated with students' academic success. Among these students, reading books was also associated with good vocabulary knowledge, but it was less important than some other activities such as watching television or playing video games. Books can also assist adult learners of a foreign language. Cho and Krashen (1994) found significant vocabulary gains in adult L2 learners after they started to read novels in their spare time.

2.3.2.3 Digital games

Digital games are an important part of many people's lives and, as Sylvén and Sundqvist (2012) point out, digital games are played by choice and at one's own initiative, rather than being prescribed by teachers. These games engage learners and make them feel involved in tasks, which are important aspects of learning (Reinders & Wattana, 2011). It has been proposed that certain games, such as massively multiplayer online role-playing games (MMORPGs), are particularly good for language learning because they expose L2 English learners to an environment that is linguistically rich and cognitively challenging, and provides them with opportunities for L2 input and interaction (Sylvén & Sundqvist, 2012). In games such as *World of Warcraft* (*WoW*) there are many tasks that require collaboration with fellow players, and more experienced players are expected to help newcomers learn their way around and advance in the game. This means that players need to communicate either in writing or speech with others from around the world, and this interaction often takes place in English (Sylvén & Sundqvist, 2012).

Interaction is important in language learning. Long (1981) proposed that learning was dependent on the interplay between the L2 input, the learners' output and the feedback that they receive on this. The environment created within online role-playing games is in many ways ideal for language learning, as it is often inclusive and non-hierarchical and has

expectations of constant interaction (Reinders & Wattana, 2011). Sylvén and Sundqvist (2012) conducted a study to determine whether playing digital games such as *WoW*, which is a MMORPG and therefore affords many opportunities for inter-player interaction, would lead to more English language acquisition than playing games such as *The Sims* in which players do not need to interact with others and there is no requirement for language output. They compared English proficiency and time spent playing digital games for Swedish primary school students in grades 4 to 6. They found that students who spent more time playing MMORPGs scored higher on English proficiency tests, particularly with regard to vocabulary.

Other observational studies have also found that playing digital games requiring high levels of inter-player interaction is correlated with greater English proficiency. Sundqvist (2009) collected data on the amount of extramural English that Swedish year 9 students were exposed to and compared this with their English vocabulary knowledge and oral proficiency. She found that extramural English activities that required the learner to interact in the language and rely on their language skills (e.g. playing games) had a greater impact than passive exposure such as watching films.

It is important to note that observational studies, such as those mentioned above, are potentially problematic, as the correlations between game play and language proficiency do not necessarily indicate that one causes the other. Even if it is cause and effect, it might be that game playing improves English or it may be that learners who are more proficient in English to begin with are more comfortable playing games in English. However, there are also experimental studies which indicate that games could be helpful in language acquisition. Rankin, Gold, and Gooch (2006) introduced a modified version of a MMORPG to a group of students learning English. These students played the specially modified game for a minimum of 16 hours over the course of a month. Participants were motivated to practise their English, and the vocabulary of some participants improved by 40% as a result of playing.

Motivation plays an important role in second language learning. The more that learners are willing to use the target language to communicate, the more often they will engage with the

language, which gives them more opportunities for learning (Reinders & Wattana, 2011). Digital games have also been shown to affect willingness to communicate among L2 learners and also to create an environment that is low in anxiety, which has also been shown to improve learning (Reinders & Wattana, 2011). Because players are challenged, and yet find the tasks achievable, they are motivated to continue playing, which in turn improves their English skills (Sylvén & Sundqvist, 2012). Reinders and Wattana (2011) conducted a study with university students in Thailand who did not have contact with English outside of school and were very reluctant to interact in English. The researchers modified a MMORPG so that it required more language use and was able to be integrated into the students' language classes. The students were willing to use English much more than they had prior to the game, and a follow-up interview study (Reinders & Wattana, 2014) showed they were much more comfortable and relaxed about using English, leading to better learning outcomes.

2.3.2.4 Other online learning strategies

Technology provides enormous potential for language learning, and allows access to authentic language texts and a range of support and learning materials, as well as the freedom to choose when to take advantage of it (Lai & Gu, 2011). A survey of university students in Hong Kong showed that a wide variety of internet-based tools are used to help with language learning, including social media sites, blogs and wikis (Lai & Gu, 2011). The students felt that they got the most benefit when the experience was relaxing and motivating. Some of these benefits of online language learning can also be applied in a classroom setting. In study by Levine, Ferenz, and Reves (2000), students learning English in a computerised environment developed better critical reading skills in English than they did in a conventional classroom. This difference was attributed to the relative independence of the students in being able to decide which information was interesting and important to them, as well as giving them more freedom of choice in topic and the speed at which they worked.

2.4 Academic language

The origins of English vocabulary can be seen as coming from two distinct sources: the Anglo-Saxon words, which tend to be shorter, learned earlier for L1 speakers and used more for everyday purposes, and the words of Greek and Latin origin, which tend to be longer, more foreign-sounding and learned later in life (Corson, 1997). The vocabulary falling into

the second category tends to be acquired through the education system in the adolescent years and continues to be learned throughout adult life (Corson, 1997). Corson highlights the difference between the purposes of these two categories of words by contrasting the words in the Birmingham Corpus, which is designed to teach everyday words to people learning English as a second language and the University Word List, which is designed to teach L2 English learners the basics of language used in academic texts. From the top 150 'everyday English' words, only two are of Graeco-Latin origin (*very* and *because*), whereas the top 150 words in the academic word list are almost entirely from Latin and Greek, apart from two of Germanic/Scandinavian origin (*shift* and *undergo*) and a small number of words directly imported from French.

Because many of the Graeco-Latin origin words are encountered for the first time in an academic context, and often not until late primary or early secondary school, even for L1 speakers, exposure to these words is more restricted to formal education settings (Corson, 1997). As Mauranen et al. (2010) point out, there are no native speakers of academic English and even L1 English speakers can face challenges when first confronted with academic English. There is evidence that language learned earlier and later in life are stored differently in the brain (Nakada, Fujii, & Kwee, 2001). Consequently, academic language may be processed differently from general language. Add to this the morphological complexity and rarity of many academic words and it is no surprise that academic language poses a challenge to both native and non-native speakers (Corson, 1997).

2.4.1 Learning academic English

For most speakers of English, there is little morphological and semantic transparency in words originating from Latin and Greek. The component parts of compound words are less likely to be English words on their own, which means that the meanings are often less obvious than Anglo-Saxon origin words. The Latin origins of many academic words give students whose L1 is a Romance language an advantage when learning to use academic language (Corson, 1997). Increased exposure to Graeco-Latin words, as well as discussion about meanings can help students learn academic words more easily, and students of Latin and Ancient Greek would clearly have an advantage in learning these words (Corson, 1997).

One of the challenges faced by students learning academic English is that it is primarily non-interactive, so less feedback is available to assist in the learning process compared to a conversational setting (Schleppegrell & Christian, 1986). The majority of academic tasks are solitary activities and the meaning must be constructed by the individual alone (Schleppegrell & Christian, 1986). Social interaction is vital to learning new languages (Long, 1981), so the circumstances in which academic language is most often encountered are less than ideal for language learning (Schleppegrell & Christian, 1986). Corson (1997) recommends group work and classroom discussions as the best way to learn new academic words, as this is a way to confirm the meaning of words.

2.4.2 Academic word lists

Vocabulary is identified as one of the main problems for learners of English as a foreign language in an academic context (Vongpumivitch, Huang, & Chang, 2009). Vocabulary was shown to be more important than other factors such as syntax or subject knowledge in enabling L2 reading (Laufer & Sim, 1985). A major difference between academic and conversational English is the vocabulary range, and this can be overcome with additional training. Pétursdóttir (2013) found a significant improvement in Icelandic students' comprehension of English academic words following additional vocabulary teaching sessions. Laufer (2000) has shown that explicit classroom instruction is the most effective way to teach L2 vocabulary and is the best way to facilitate both intentional and incidental (occurring during the process of other activities) learning. Most teachers of academic English would agree that it is necessary to include vocabulary as part of their course, but it can be difficult to determine which words are the most helpful to teach.

To help with this, Averil Coxhead developed the Academic Word List (AWL) in 1998. The AWL is a list of 570 word families gathered from a combination of 414 texts sourced from international academic journal articles, textbooks and texts from scientific corpora and totalling approximately 3.5 million words (Coxhead, 2000). The words are arranged into families in order to streamline the list and because words appear to be organised this way in the mental lexicon (Nagy et al., 1989). For the purposes of the AWL, word families were

defined as the stem plus any closely related affixed forms (Coxhead, 2000). The words were selected based on three criteria: that they were not included in the 2,000 most frequently occurring English words (as represented by the General Service List (GSL)) developed by West (1953), that they occurred at least 10 times across a range of subject areas, and that members of the word family had to occur at least 100 times in the academic corpus as a whole.

The AWL was found to account for 10% of words within the academic corpus compiled by Coxhead (2000). When combined with West's (1953) GSL words, they accounted for approximately 86% of the total words in the corpus (Coxhead, 2000). Coxhead (2000) found that some subject areas are covered by the AWL better than others, but points out that this is also the case for the GSL. When she applied the AWL to another academic corpus selected on the same criteria as the first one, she found it only covered 8.5% of lexical items. This was hypothesised to be because of the higher proportion of science-based texts in the second corpus. In order to test whether the AWL specifically applied to academic texts rather than general writing, it was tested on a corpus of fiction texts and was found to cover only 1.4% of the lexical items found there. This is considerably lower, indicating that the majority of the word families covered by the AWL are specific to academic writing and would therefore be helpful in teaching students to read and understand academic English.

The AWL has been independently tested by Hyland and Tse (2007), who created their own corpus of 30 research articles, 7 textbook chapters and 20 academic book reviews in each of 7 disciplines in order to represent the range of material students would be expected to encounter at university. They also included some work produced by students, including master's theses, doctoral dissertations and undergraduate theses. They found that the AWL covered 10.6% of words in their corpus, although the science sections of the corpus were less represented than other subjects. In the science texts, 22% of words were not covered by either the AWL or the GSL, meaning that if students in these subjects were taught using these words lists, approximately one word in five would still be unfamiliar. The researchers conclude that the AWL is a useful tool for teaching academic language, although more subject-specific word lists would also be helpful.

Several researchers have experimented with applying the AWL to their own particular field to see if the percentages of academic words are equally applicable across all disciplines. Chen and Ge (2007) found that the AWL applied to medical research articles covered around 10% of the words in the corpus they designed. They found that the highest proportion of academic words occurred in the abstract (the most general part) of articles and the lowest proportion occurred in the results section (which is the most specific and technical). Vongpumivitch et al. (2009) created a corpus of 200 research articles from the field of applied linguistics and found that AWL words account for 11.17% of this corpus. They found that the other frequently occurring words were specific to the field of applied linguistics and included terms for research methodology and language education.

Although the list of 570 items in the AWL does not seem unreasonable for students to learn, this number only covers the head words of the word families, and there are in fact over 3000 words (all the inflected and derived forms of the words) when listed individually (Ward, 2009). The list of academic words that can apply to any discipline is perhaps more than any individual needs to know if they are already struggling with the words from their own subject. Therefore some researchers have investigated the idea of making academic word lists specific to particular subjects. Ward (2009) decided to develop his own to help Thai engineering students with the complex English found in engineering textbooks. He managed to create a list of 299 words that covered 21% of the words found in engineering textbooks that made up the corpus, where the much larger AWL covered only 11.3% of the same corpus.

There are a number of complications with relying on words lists such as the AWL to teach academic language. One is that they fail to account for multi-word collocation patterns, which are sets of two or more words which appear together more frequently than would be expected by looking at their individual frequencies (Stubbs, 1995). Coxhead's AWL excludes words which are found in the GSL, and Durrant (2009) highlights that a number of these are used for specific purposes. For example, *control* and *group* are commonly found in general language, but the combination of *control group* is much more specific to academic language. Durrant (2009) identified 1000 two-word collocations that were frequent across a variety of academic subject areas, but noted that they occurred significantly less frequently in the area

of humanities. Homonyms, where word with unrelated meanings have the same written form, are another complication because words with relevance to academic writing may be discarded along with their homonyms which occur frequently in general language (Hyland & Tse, 2007; Vongpumivitch et al., 2009).

Many books have been written with the aim of assisting students studying in English to master the vocabulary required. In a review of 27 books on this topic, Tribble (2009) found that most of the books were best suited to students who would be writing essays, and were therefore usually studying humanities subjects, rather than students who needed to use English for more evidence-based writing. This is interesting given the current and increasing trend for teaching science and mathematics subjects in English as early as secondary school. The more scientific evidence-based subjects are also the ones more likely to be published in English in international journals, while the humanities and social sciences subjects, which are more likely to be specific to the local culture, are more likely to be published in the local language (Kirchik, Gingras, & Larivière, 2012; Tardy, 2004).

2.5 English in Scandinavia

The Nordic countries (Denmark, Finland, Norway, Iceland and Sweden) are small language communities and have a reputation for having a high level of English proficiency (Henry, 2014). Along with the Netherlands, these countries have the highest self-reported second language proficiency among 33 European countries studied, with an average of more than 85% of the population mastering a second language, usually English (MCG Media Consulting Group, 2009). Even more than 20 years ago, it was noted that English was undergoing a shift in Nordic countries from being a foreign language to being a second language, with proficiency in English being decisive in both education and career prospects (Phillipson, 1992). The Danish minister for education at the time was quoted as saying that English has advanced from being Denmark's first foreign language to being the 'second mother tongue' of Danes, although this apparently was somewhat of a surprise to the Danish public (Phillipson, 1992, p. 9).

Fifteen years ago, Graddol (2000) listed Norway, Denmark and Sweden, although interestingly not Finland or Iceland, as three of 19 countries in which a shift was occurring from English being a foreign language to being a second language. The main distinction Graddol (2000) used to differentiate between a fluent speaker of English as a foreign language and an L2 speaker is the extent to which English is used within the community and thus constitutes a part of the speaker's identity. Virtually all study programs at Nordic universities involve textbooks written in English, meaning that students have little hope of high academic achievement without good knowledge of English (Phillipson, 1992). Even within Scandinavia, academic functions such as publication, conferences and seminars are increasingly conducted in English even though Norwegian, Danish and Swedish are to a large extent mutually comprehensible, meaning that English is becoming a necessary professional skill (Phillipson, 1992).

Although Graddol (2000) did not include Iceland in the list of countries where English is used as a second language, a recent study showed that there is a wide exposure to English there and increased pressure to use English more in everyday life, including in business and education. Arnbjörnsdóttir (2011) asked Icelandic adults how much English they were exposed to. The 750 participants were interviewed by telephone, and 14 adults were also asked to keep a journal to record their English exposure. In the phone survey, 86% of people reported hearing English every day and 65% hear it for more than an hour a day, while 43% read English every day. Only 19% said they used English every day and 41% said they used English once a month or less. The authors propose that these high levels of English exposure mean that English should no longer be considered a foreign language in Iceland. The shift towards increased use of English in Iceland appears to be a reflection of the steady increase of English around the world.

The high levels of exposure to English in Iceland may lead to high expectations of English proficiency, but this may not necessarily be realised, especially when it comes to academic language. Berman (2011) conducted a study in which Icelandic university students were given an academic text to read in English and then asked to answer some questions. He found that more than 20% of the students had serious difficulty in answering the questions correctly. He describes a study which proposes that a lack of academic English proficiency is

responsible for the high drop-out rates of nearly 50% after the first year of study at the University of Iceland. However, he also points out that studies elsewhere have found that many secondary school graduates also feel that their reading abilities in their first language are not as good as they should be. For example, in 2014, only 64% of American students graduating from secondary school met the English requirements for university courses (ACT, 2014). It may be that these results reflect a reading problem for the Icelandic students, rather than an English problem per se.

It is often taken for granted that, since Scandinavian students' spoken production and listening comprehension proficiency is so high, they are just as capable of understanding advanced educational texts in English (Shaw & McMillion, 2008). In addition to this, many universities, especially in Northern Europe, have high levels of English proficiency as an entry requirement for university, leading to the assumption that all university students 'should be able to take the use of English in their stride' (Pecorari et al., 2011, p. 16). This is similar to the situation in institutions in English-speaking countries where international students who learned English as a second language are expected to perform at the same level as native English speakers, based on their having achieved a certain level in the TOEFL or IELTS exam (Pecorari et al., 2011).

Most university courses in Scandinavia use English language textbooks and articles, although lectures and discussions may be in the local language (Shaw & McMillion, 2008). Scandinavian students generally use the same textbooks as their counterparts in English-speaking countries (Shaw & McMillion, 2008, 2011). The use of English in teaching prompts a mixed response from students, with many feeling that it places additional burdens on them, despite recognising that the additional practice will stand them in good stead for their future careers (Pecorari et al., 2011). Only 13% of Swedish students surveyed said that they would prefer to have textbooks in English if they had the choice (Pecorari et al., 2011). Vang (2013) found that when students believe their language skills to already be sufficient for the task, they are resistant to devoting more time to improving.

2.6 English in Norway

Norwegians have a particularly strong reputation for their fluency in English (Bonnet, 2004). In a study of eight European countries, Norwegian students achieved the highest scores on written English production and oral comprehension, even compared to their Nordic neighbours (Bonnet, 2004). English is extremely important in the professional sphere in Norway, so high levels of proficiency are essential to give a competitive advantage when seeking employment. Hellekjær (2012) found that 95% of export activities in Norwegian firms are conducted in English, whether in English speaking countries or as a lingua franca in other countries. The Norwegian national curriculum from 1997 explains that 'it is natural for Norwegian pupils to learn English as their 1st foreign language. English is a major world language, and represents the language area with which we have the closest links in terms of geography, culture and language history' (Bonnet, 2004).

English first became a compulsory subject in Norwegian schools in the 1960s, where it was taught from year 5 (Bonnet, 2004; Norwegian Ministry of Education and Research, 2004). Since 1997 it has been taught since the first year of primary school and is the first and most important foreign language learned in Norwegian schools (Norwegian Ministry of Education and Research, 2004; Utdanningsdirektoratet, 2013). It is currently the only compulsory foreign language in the obligatory school system and is in fact not even classified as a foreign language in the national curriculum (Utdanningsdirektoratet, 2013). It is also the dominant 'other language' in everyday life (Bonnet, 2004, p. 52), with English language music, media and advertising contributing to exposure outside of school.

In the curriculum (which is, tellingly, translated into English in its entirety), English is listed as a core subject and as separate from foreign languages. From years 1 to 4, Norwegian students are taught English in the classroom for 138 hours, which is an average of 34.5 hours a year, or less than an hour a week (Utdanningsdirektoratet, 2013). This increases to 228 hours in years 5 to 7 and 222 hours in years 8 to 10. In upper secondary school (years 11 and 12), depending on the program chosen, English is usually taught for 140 hours over one or two years, or more in the case of language specialisation students (Utdanningsdirektoratet, 2013). If students finish their English education in the first year of upper secondary school, there could be two year gap without formal English education by the time they start

university. At the age of 16, Norwegian students reported that they had 84 minutes of English homework per week on average, which was less than Danish students (102 minutes), but more than Swedish students (72 minutes) at the same age (Bonnet, 2004).

There have been concerns that English is taking over in some sectors at the expense of Norwegian, particularly in high status areas such as academia. The Nordic Council of Ministers commissioned a report in 2001 to determine whether this was the case, but the results were inconclusive (Ljosland, 2007). Brock-Utne (2001) identifies five key areas in which English can be considered a 'threat' to Norwegian, which are the increasing use of English words in Norwegian academic, bureaucratic or technical language, the increasing sales of academic literature in English over Norwegian, the recruitment of teaching staff who do not speak Norwegian, the growth of master's degree courses taught in English, and financial rewards being given to academics who publish in English. The majority of publications from Norwegian research are published in English, particularly in the fields of natural science, medicine and technology (Ljosland, 2007).

The standard regulations for the degree of Philosophiae Doctor in Norway do not specify which language a dissertation must be written in (Norwegian Council for Higher Education, 2003), so the individual institution or faculty can decide whether or not to specify a language (Ljosland, 2007). On investigation of the regulations for PhD programs, Ljosland (2007) found no regulations requiring that dissertations be written in Norwegian, but a number that only allowed English. There are also often rules stating that at least one member of the evaluation committee must be from a foreign country, and all committee members must be able to read the thesis, which usually means it should be written in English. From the perspective of the students, there appears to be a certain amount of social pressure to write in English, as well the consideration that the potential audience for a PhD thesis is usually experts in the field, of which there may be only a few who understand Norwegian. By writing in English their work is accessible to a larger audience (Ljosland, 2007).

A significant number of university courses in Norway are taught in English. In 2007, nearly a quarter of classes were listed as being taught in English or could be taught in English if there

were non-Norwegian speaking students present (Ljosland, 2007). Even when English is not officially stated as the language of instruction, informal language shifts from Norwegian to English are common (Ljosland, 2007). In 2002, the clause in the Universities and Colleges Act stating that the 'language of instruction is normally Norwegian' was removed with the intention of allowing for more English-medium courses, thereby attracting more exchange students to Norway (Ljosland, 2007).

'Norwegian institutions of higher education take for granted that English as a foreign language (EFL) instruction in upper secondary schools effectively prepares students for the use of English in higher education' (Hellekjær, 2009, p. 199). Norwegian students only need to study English until year 11, and do not need to pass any English exam to be admitted to Norwegian universities, only to achieve sufficiently good grades overall (Utdanningsdirektoratet, 2013). Foreign students intending to study at Norwegian universities, however, must demonstrate a minimum level of English proficiency. This minimum level varies between universities. At the University of Oslo, international students need an IELTS score of 5 for studying at an undergraduate level and 6 for a graduate degree (University of Oslo, 2015). At the Norwegian University of Science and Technology (NTNU), the English language requirement for master's students and exchange students from outside the European Union is an IELTS score of 6.5 (NTNU, 2015). There is no English language proficiency requirement for Erasmus students, but there is an expectation that incoming Erasmus students have 'a good level of English language that enables them to communicate well at an academic level' (NTNU, 2015).

Despite Norwegian students achieving high scores in tests of English language skills, high standard deviations were seen in tests of reading comprehension and written production of English (Bonnet, 2004), meaning there is a large skills variation between students. This seems to be the case in other Nordic countries too, with substantial variation between individuals in English proficiency levels also noted in Iceland (Pétursdóttir, 2013), despite similar educational backgrounds. This means that although some students may be perfectly equipped to handle English language education, others may be at a disadvantage because they lack language proficiency.

Studies have shown that although Norwegian students may be proficient in English in terms of basic interpersonal communication skills (BICS), they may not have developed the cognitive academic language proficiency needed for academic language, and are therefore struggling with English at university (Hellekjær, 2009). Hellekjær (2009) tested Norwegian university students on academic English reading proficiency and found that around 33% had serious difficulties in reading English and a further 44% had some difficulty. Olsen (1999) also found that Norwegian students are struggling with English, and that there was a great deal of cross-linguistic interference.

Previous studies have found that two-thirds of Norwegian students about to start university did not achieve Band 6 on the IELTS Academic Reading Module, which is the minimum score for entry into English-speaking universities (Hellekjær, 2005). This is particularly concerning considering, as discussed earlier (see section 2.1.3), that there is considerable doubt as to whether this score is sufficient for academic success at university (Bretag, 2007; Feast, 2002), and the IELTS handbook considers people who achieve a Band 6 level of English to require further English teaching before undertaking university courses (IELTS, 2007). This is also important because of the link between language proficiency and academic success (Graham, 1987; Kerstjens & Nery, 2000).

2.6.1 Comparison of Norwegian and English

In order to gain a clearer picture of the Norwegian relationship to English, it is important to consider the relationship between the languages themselves. Norwegian and English have common origins in the Germanic language branch of the Indo-European language family, although for historical reasons English vocabulary has been heavily influenced by Romance languages such as French and Latin. Norwegian is a Scandinavian language and closely related to others in this family, especially Swedish and Danish, which are mutually intelligible. Norwegian and English share many cognates, some of which date back to a common Anglo-Saxon language or from the time of Viking occupation of parts of Great Britain in the 9th and 10th centuries (Freeborn, 1998), and some which have been loaned in more recent times. Norwegian and English also share a very similar grammatical structure (Olsen, 1999). As discussed previously in section 2.3.1, the similarity between these

languages means knowledge can be transferred more easily than between unrelated languages.

'Norwegians have a reputation for learning English easily since their first language facilitates the learning', and the common Germanic origin of the two languages and high number of cognates undoubtedly give Norwegians an advantage when learning English (Olsen, 1999, p. 192). However, some of this advantage may disappear when it comes to learning academic English, given that such a high proportion of academic words are of Graeco-Latin rather than Germanic origin. This difference in word origin may contribute to the differences seen between the high level of proficiency in conversational English and the struggles that Norwegian students appear to have with academic English. The language similarity can also lead to 'false friends', where a word or phrase in one language looks similar to one in another language but has a different meaning. Olsen (1999) found that Norwegian students in lower secondary school experienced confusion from similarities between English and Norwegian when constructing sentences in English.

2.6.2 Sources of English language in Norway

Norway has a relatively small population of just over 5 million (Statistics Norway, 2015) and a strong connection to English-speaking cultures. Foreign language television (usually English) accounts for more than 90% of programming time and, with the exception of children's television, is usually subtitled rather than dubbed (MCG Media Consulting Group, 2009). A report from the Institute of Media and Communication at the University of Oslo estimates that the average Norwegian watches 56.5 minutes of subtitled television a day, which equates to 344 hours a year. On the basis that an hour of subtitled television equates to 30 pages of text and that the average novel length is 350 pages, Blystad and Arnt (2004) concluded that the average viewer reads more than 29 novel's worth of subtitling in a year. It is likely that the majority of these subtitled programs are in English, meaning that the average Norwegian television viewer is being exposed to a high percentage of English language television.

A survey of 16-year-old Norwegian students in 2004 (Bonnet, 2004) revealed that there was a lot of opportunity for exposure to English. The report found that 86.5% of the students used the internet and 65.4% played computer games, both of which are opportunities for contact with English. These numbers are likely to have increased over time with the growing popularity of the internet, and especially with the possibilities of streaming and downloading movies and television programs. When asked which language they listened to music in, 91.9% of the students said they listened to more music in English than Norwegian. They also said that they spent an average of nearly 23 hours a week listening to music, which means a lot of exposure to English song lyrics. Almost all participants said they watched television programs in English. The majority (58.6%) watched these programs with subtitles, 12.7% did not use subtitles and 26% sometimes used subtitles when they watched shows in English. English was also shown to be popular, with 88.8% of the survey respondents saying they liked English and 91.6% saying they thought it was important. The students who participated in the survey were also asked what sources of English were important to them in acquiring the language. Just over half of the respondents (52%) said school was the most important, 34.5% said they learned the most through media and the remaining 13.5% said they learned from other sources.

Products imported from the United States, and the accompanying advertising, play a large role in influencing attitudes towards English in Norway. Anglophone culture has pervaded Norwegian society and Norwegians have adopted many English words and phrases into their language (Norås, 2007). This English influence is particularly apparent in young people and those living in urban areas, but can be seen in most parts of society. English loan words are used when there is no exact Norwegian equivalent (e.g. *drama queen*), as well as for terms from computer games (e.g. *head shot*), sports (e.g. *backflip*) and products originating from English-speaking countries (e.g. *muffins*), but also seemingly whenever the English word or phrase comes to mind before the Norwegian one (Norås, 2007). Unlike some countries, such as France and Iceland, not all new concepts receive official translations into the local language, meaning that for some concepts the English word or phrase is the only option (Norås, 2007).

2.7 The current study

The research discussed above appears to suggest that young Norwegians have high levels of general English proficiency (e.g. Bonnet, 2004) and troublingly low levels of academic English proficiency (Hellekjær, 2005, 2009). Many studies have shown extramural language exposure to be important in language acquisition, but sources of English such as television and digital games are unlikely to provide learning opportunities to increase academic vocabulary (Corson, 1997). Because English plays a crucial role in Norwegian higher education (Ljosland, 2007), and students are expected to read academic English with native-like fluency (Bonnet, 2004; Shaw & McMillion, 2008), it is important to know the extent to which students are able to benefit from reading in academic English. Therefore, this study aims to investigate how Norwegian university students compare to native English speaking students in their understanding of academic English by comparing reading times and comprehension for an academic and a general language text. The study will also investigate sources of English language knowledge for these students and whether they feel that they understand the type of writing they are expected to read at university.

3 Methods

3.1 Aims and predictions

The aim of this study was to investigate whether Norwegian students' substantial levels of exposure to extra-curricular English would give them an advantage in understanding general English more than academic English. Academic language found in a university setting can be a challenge for students in any language, but this may prove to be especially difficult if there has been limited exposure to academic language before starting university. The main prediction was that Norwegian students would have more difficulty in understanding academic English than a control group of native English speaking Australian students, for whom education has been conducted in (academic) English throughout their schooling, rather than encountering it for the first time at university.

Because the Norwegian students were reading in a second language, it was predicted that they would read more slowly than the Australian students and also receive lower scores on comprehension and vocabulary questions. The difference between the Norwegian and Australian students was predicted to be greater in the academic reading task than the general language reading task for both reading time and comprehension. Because academic English contains words that are not necessarily part of the everyday lexicon, it was also predicted that the Australian students would take longer to read the academic text than the general one and score lower on the comprehension and vocabulary questions for this task.

The study also investigated the reading habits, motivations and attitudes of Norwegian university students towards studying in second language and whether there were links between these factors and English reading proficiency. It was predicted that the Norwegian participants would consider English language media and popular culture to be just as or more important than school lessons as a source of their knowledge of English and that they would hear and read English in contexts that were outside of school. It was also expected that both groups of students would consider the academic reading to be more difficult than general reading.

3.2 Participants

Data on the English reading comprehension proficiency and reading habits were collected from 182 university students in Norway and Australia. First year students were targeted in particular for participation in the study because one of the aims was to investigate the transition from Norwegian language information in secondary schools to English language information in tertiary education for the Norwegian students. The Australian students were used as a control/comparison native English-speaker group, to test whether students having difficulty with reading comprehension is due to a problem with studying in a second language or to adjusting to reading academic language as a change from the language they are more familiar with.

Australian students were recruited by contacting teaching staff of first year classes at the University of Wollongong and the University of Canberra and asking them to inform their students about the survey, either by email or information on the online learning site for the class. Social networking was also used to spread information about the survey, with information being posted on Australian university Facebook pages, and information being passed on via personal contacts.

Norwegian students were recruited by similar methods, including contacting teaching staff of first year classes and asking them to inform their students about the survey, either by email or information on the online learning site for the class. Seven classes were also informed directly by the researcher about the survey during class time. Posters were put up around two campuses at the Norwegian University of Science and Technology (NTNU) and leaflets were also handed out. Social networking was also used to spread information about the survey, with information being passed on via personal contacts.

Students in both countries were told that the survey was investigating studying in a second language, and that they would need to read two texts and answer some questions about their reading habits, but neither group was told about the ‘academic language’ aspect of the study in order to not influence results. Australian students were told that they would be part of a study to compare their understanding and use of English with that of Norwegian students who

were also studying in English. Students studying a range of subjects were targeted in order to give a cross-section of the population and so that groups could be compared.

This research used an online survey which was anonymous and unsupervised. The reading sections were timed, and it was impossible to know whether participants were reading the texts carefully before answering questions or merely guessing the answers. It was also possible that participants could have read the texts without completing the survey and then had a second attempt, in which case the timing would not reflect the actual total reading time. Therefore it was decided to exclude reading data from participants who completed either reading task in under a minute (the next fastest participant took over two minutes), which resulted in five participants (four native Norwegian speakers and one native English speaker) being excluded. Six participants did not have either English or Norwegian as their first language, so these were also excluded from the reading data, as the aim was to compare native Norwegian-speaking students in Norway with native English-speaking students.

Once these participants were excluded from the data, 166 participants remained. There were 36 native English-speaking Australian students (27 female and 9 male) and 130 native Norwegian-speaking students who did not list English as a native language (77 female and 53 male). The median ages for each group were very similar – 21 for the Norwegian group and 22 for the Australians.

3.3 Procedure

The data collection took the form of an online survey consisting of two texts to test reading comprehension, and a self-report questionnaire. The survey was created using the program Survey Gizmo (http://www.surveygizmo.com), which was selected because it enabled the recording of the time taken in particular sections. The reading comprehension texts and the self-report questionnaire were pilot tested on 5 native English speakers and 5 native Norwegian speakers to check for understanding and to ensure that the reading comprehension questions were at a reasonable level of difficulty. Changes were made accordingly. The reading comprehension texts and self-report questionnaire can be found in the appendix.

3.3.1 The reading comprehension tasks

The texts for reading comprehension were adapted from an article about bilingualism in the *Journal of Child Language* ('Dual language exposure and early bilingual development' by Hoff et al. (2012)) and an article in *The Economist* ('Once more with Feeling', October 2014) which was about prosthetic limbs. The texts were selected because they were similar lengths and were on subjects that students were likely to find interesting, but have little prior knowledge about. And although they both described research findings, and therefore both contained complex information, they were written in very different styles, and contained different proportions of words in Coxhead's Academic Word List (Coxhead, 1998).

The texts were edited slightly from the originals to make them a more similar length (587 words in the academic text and 612 words in the general language text after editing) and to make the percentage of AWL words more closely matched to the standard proportions for academic and general language.

The AWL is divided into 10 sub-lists, each containing 60 word families (except sub-list 10, which contains 30). The first sub-list contains the 60 most frequently used words in the AWL, the second contains the 60 next most common words and so on. A web program has been developed by Sandra Haywood at the University of Nottingham which highlights the words in a text that are listed in the AWL (Haywood, n.d). The sub-list level can be selected, so that each level number is equal to the number of sub-lists it contains, so that, for example, level 4 contains the first four sub-lists of the AWL. This program was used to calculate the percentage of academic words in the two reading comprehension tasks. The level was selected on the basis that the AWL covers approximately 10% of words used in academic writing and only 1.4% of total words in a fiction collection of the same size (Coxhead, 2000), and therefore provides a useful distinction between academic and general language. It was found that level 5 gave the best match to these proportions for the given texts; the academic language text (Bilingualism) contained 9.54% academic words, and the general language text (Prosthetic Limbs) contained 1.96% academic words from the first five sub-lists, after editing.

After reading the academic and general texts, participants were asked eight multiple-choice questions about each text, each with four possible answers, to test reading comprehension. The time they took to read each text and answer the questions for that text was recorded by the survey program. For each text, four of the questions related to the content of the text to measure understanding of particular sections and also the text as a whole. The remaining four questions tested comprehension of individual words in the texts. These words were selected on the basis that they have multiple meanings, but only one correct meaning in the context of the text. For each of these questions, the incorrect options included words and/or definitions that would also fit, although incorrectly, in the context, and alternative definitions of the word (which did not make sense in the context).

Participants were informed that they would be timed in reading the text and answering the questions, and were asked to answer as quickly and accurately as possible, but were also reminded that the survey was anonymous and so there was no pressure on them as individuals to perform. Participants were able to answer the survey and perform the reading tasks in their own time and using their own electronic devices, which was intended to give a realistic reflection of the reading environment when they read texts for their studies. This also meant that they had access to the resources that they would usually have available when reading. Participants were neither encouraged nor discouraged from looking up words, but were asked at the end of the survey whether they had looked up any word definitions.

An attempt was made to match the words selected for vocabulary questions for frequency of occurrence by seeing how many search results were found by typing the word into an internet search engine. Unfortunately, it was extremely difficult to find words which occurred equally frequently and were difficult enough to provide a challenge in texts of approximately 600 words. The words selected from the academic text occurred more than 10 times more often in the internet search than the ones in the general language text, although this was mainly due to the high frequency of two words in the academic text: ‘account’ (in the text meaning ‘explanation’) and ‘production’ (in the text referring to the production of language, in this case ‘speaking’), which were very likely to have different meanings in general language use (see section 2.4.2 for information about homonyms). Therefore the high proportion of these

words found by the search engine probably did not reflect how often these words were used in the context in which they were found in the text.

The fact that Norwegian and English share so many cognates also presented challenges in selecting the words for vocabulary testing. An attempt was made to control for the similarity of words being tested. The words tested in the academic language article were: *acquire, production, degree* and *account*, of which *production* (*produksjon* in Norwegian) is a direct cognate and *degree* shares a common origin with the equivalent Norwegian word (*grad*) from the Latin *gradus*. The words tested in the general language were: *sensation, phantom, appendage,* and *approach*, of which *sensation* (*sensasjon*) and *phantom* (*fantom*) are direct cognates. Norwegian speakers also borrow words and phrases from English very frequently, so it is impossible to say that the other words are not used in Norwegian, but an attempt was made to match the number of identifiable cognates in the two texts.

All questions were written in English to reduce possible confusion and/or fatigue caused by switching between languages, and also to ensure that English-speaking and Norwegian-speaking participants were being asked exactly the same thing (i.e. no translation errors). The proportion of AWL words in the wording of the questions was matched as closely as possible to their respective texts. The order in which participants were presented with the reading texts was randomised to reduce effects from reading fatigue.

3.3.2 Self-report Questionnaire

The questions in the self-report questionnaire section of the survey used display logic to present participants with only the questions relevant to them, based on their answers to previous questions. Questions for native English speakers focused on their educational background and reading habits, as well as their attitudes to reading at university. These questions were also asked of the Norwegian students, but there were further questions to gain information about sources of English language information, perceived skills, and motivation for learning English. Both groups were also asked about their experiences of reading the texts in the survey, whether they looked up meanings for any of the words, and which text they felt

more confident about understanding. All questions and the comprehension texts can be found in the appendix.

The results from the self-report questionnaire are presented first, as they are important for interpretations of the findings of the reading comprehension tasks.

4 Results

Several aspects of reading were investigated in this study, and results from each will be illustrated below. First, the results of the self-report questions about experience, attitudes and opinions are described, and then the results of the reading tasks are discussed.

Results were analysed using SPSS version 21.0.

4.1 Self-report Questionnaire

4.1.1 Language

Six of the 130 Norwegian participants described themselves as having two native languages, the second language being French, German, Mandarin, Danish and Swedish (two people). More than half of Norwegian students (58%) said they spoke a second foreign language other than English and 22% said they spoke either two or three foreign languages other than English. Interestingly, only 88% of Norwegian students listed English as a language that they knew. Of the 36 Australian participants, 28% spoke a second language, with the most common being French (5 participants).

Of the Norwegian participants, 84% reported that they had spent time (including holidays) in a country where they used English as the main language of communication even if it was not the official language of the country. Participants had spent an average of 4 months in these places. The most common English speaking destinations visited by participants were the United Kingdom (17 participants) and the United States of America (15).

4.1.2 Education

For the Norwegian participants, the subject they were studying was fairly evenly divided between Science (63 participants) and Humanities (59 participants), with a small number studying Medicine (4) and Education (3). The Australian participants were less evenly divided, with 27 studying Humanities subjects, 5 studying Science, 2 who studied Accounting or Economics and 1 who studied Fine Art. Twelve (9%) of the Norwegian participants said they had taken English classes as part of their university degree. Of these, five had completed four or more English subjects.

The average amount of time that the participants had been studying at university was higher for the Australian students (2 years) than for the Norwegian students (between 12 and 18 months). Participants were also asked to indicate the highest level of education their parents had completed. A higher percentage of the parents of the Norwegian students had received a tertiary education (68% of fathers and 63% of mothers) than the parents of the Australian participants (44% of fathers and 39% of mothers).

4.1.3 English in the Norwegian education system

Norwegian participants were asked how long they had been learning English at school. The majority (69%) learned English for between 10 and 13 years, with 18% having learned English for 8 to 9 years, 10% for more than 13 years and only 3% had learned English for less than 8 years. Participants were then asked how long it had been since they last had an English class at school. For 13% of participants it had been less than a year, for 17% it was 1 or 2 years, for 42% of participants it had been 3 to 4 years without an English class and for 28% of participants it had been 5 years or more.

The majority of Norwegian students had more than half of their obligatory university reading material in English. Only 4% of students said that less than 25% of their textbooks and required course readings were in English, and only one student (studying literature and poetry) said she had no readings in English. For nearly half (47%) of participants, 75–100% of readings were in English.

4.1.4 Extramural reading

Participants were asked how much reading they did in their spare time. Of the Norwegian participants, 58% said that they read more than 4 non-school books in an average year, and 14% said they read more than 12. Amongst Australian participants, 83% read more than 4 non-school books in an average year, with 42% reading more than 12. More than half (61%) of Norwegian participants said that 50% or more of the books they read in their spare time were in English, and 44% said that over 75% were in English. Only 2 Australian participants said that less than 100% of what they read was in English (both studied foreign languages).

4.1.5 When Norwegian participants wrote in English

Norwegian participants were asked to select the answer that best reflected how often they wrote English in an average day. Only 15% of participants said they 'never' wrote in English in an average day, 42% said 'sometimes', 36% said 'often' and 7% said they wrote in English every day (Figure 1).

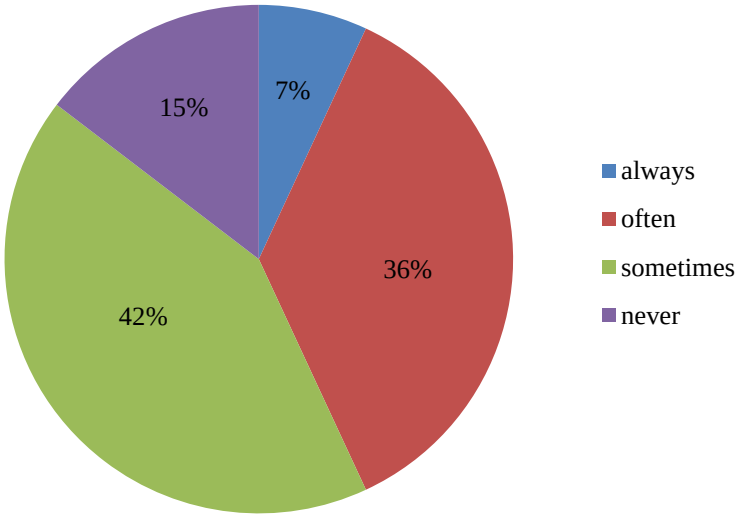

Figure 1: How often Norwegian participants said they wrote in English on an average day

The Norwegian participants were also asked in which circumstances they used English. For this question, participants were given four options and could select as many as were applicable (see Figure 2). The most common answers were that they used English for communicating with friends or a partner from abroad (67%) and writing for an international audience (56%). Other answers included using English at work, when travelling, for writing songs or when explaining an English concept to Norwegian friends.

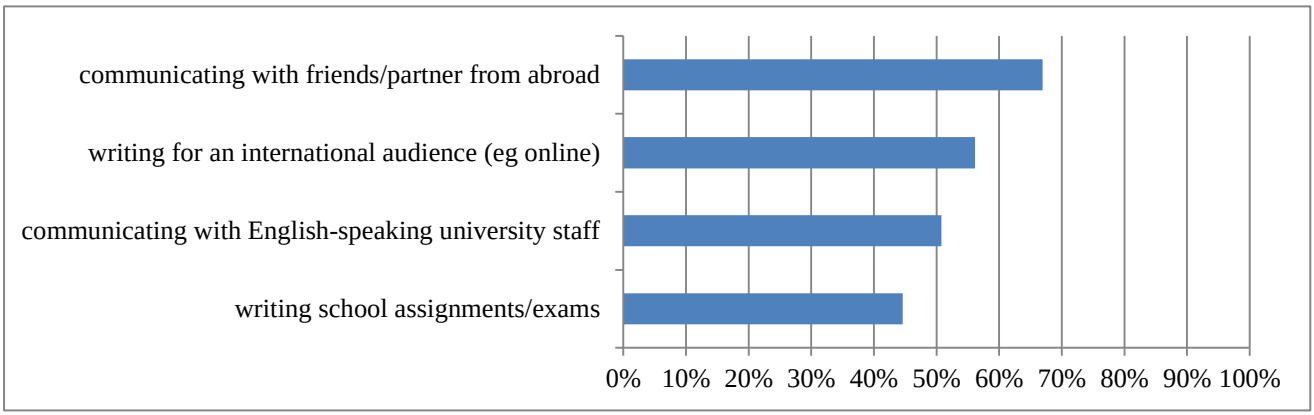

Figure 2: Percentage of Norwegian students who reported using English for each of the listed items

4.1.6 Sources of English

Norwegian participants were asked how important various sources were to their knowledge of English (Table 1). English language movies/TV shows were the most popular, with 89% saying they were 'very important' or 'quite important' in contributing to their knowledge of English. Reading non-school books also rated highly and was 'very important' or 'quite important' for 68% of participants. The option which was important to the fewest participants was 'communicating with people online, which 44% of participants stated was important to their knowledge of English. Details are shown in Figure 3 and Table 1.

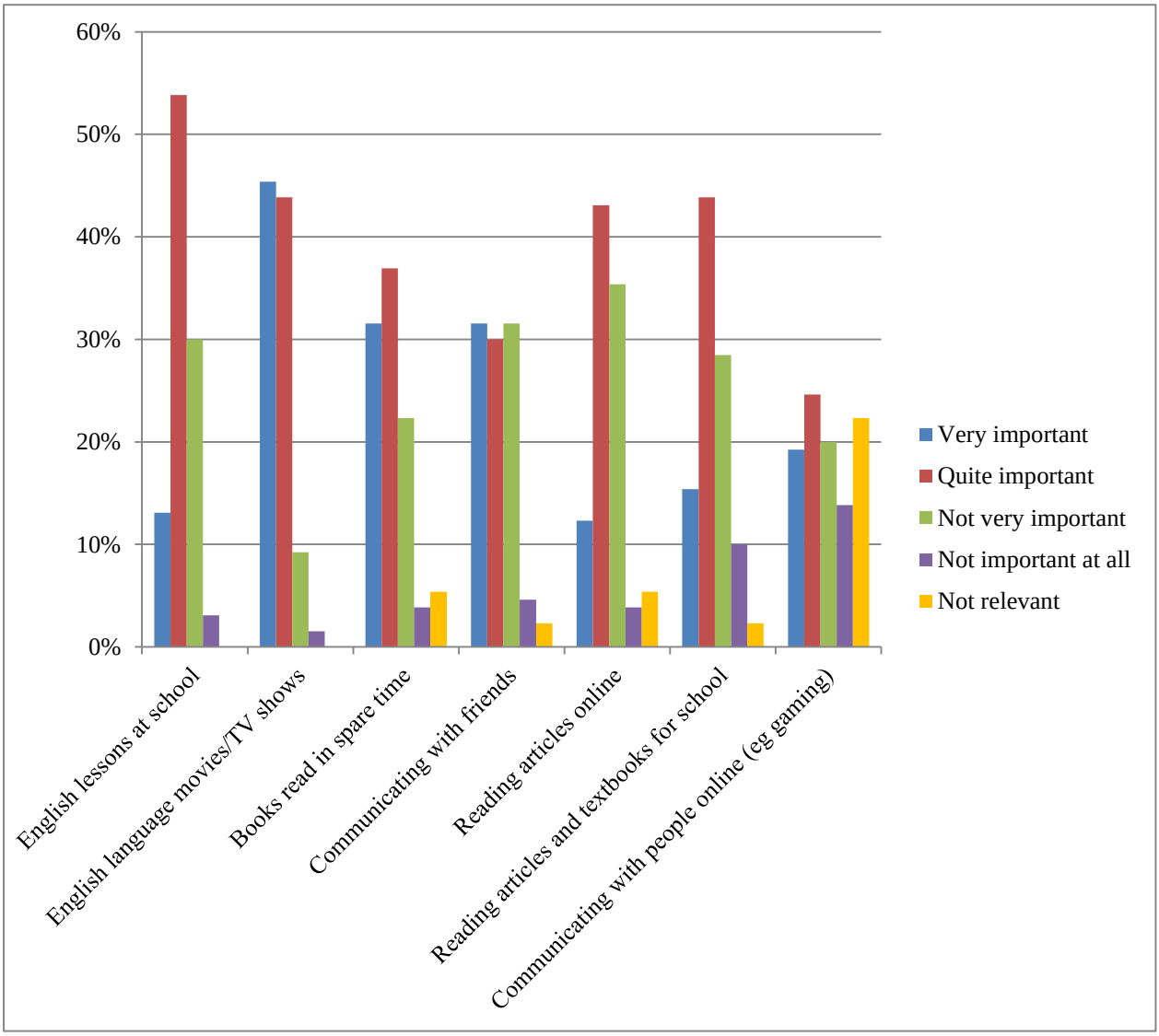

Figure 3: Importance of different sources of English to Norwegian students' knowledge of English

Table 1: Self-reported importance of different sources of English to Norwegian students' knowledge of English

	Very important	Quite important	Not very important	Not important at all	Not relevant
English lessons at school	13.08%	53.85%	30.00%	3.08%	0.00%
English language movies/TV shows	45.38%	43.85%	9.23%	1.54%	0.00%
Books read in spare time	31.54%	36.92%	22.31%	3.85%	5.38%
Communicating with friends	31.54%	30.00%	31.54%	4.62%	2.31%
Reading articles online	12.31%	43.08%	35.38%	3.85%	5.38%
Reading articles and textbooks for school	15.38%	43.85%	28.46%	10.00%	2.31%
Communicating with people online (e.g. gaming)	19.23%	24.62%	20.00%	13.85%	22.31%

4.1.7 Subtitles

Norwegian participants were asked to indicate how often they rely on subtitles when watching movies or TV shows in English (Figure 4). More than half (53%) said they 'sometimes' relied on subtitles and 33% said they 'never' did. Only two participants out of 130 said they 'always' needed subtitles when watching programs in English. Of the participants who said they used subtitles, 63% said they would prefer the subtitles to be in English and the other 37% said they found Norwegian subtitles more useful.

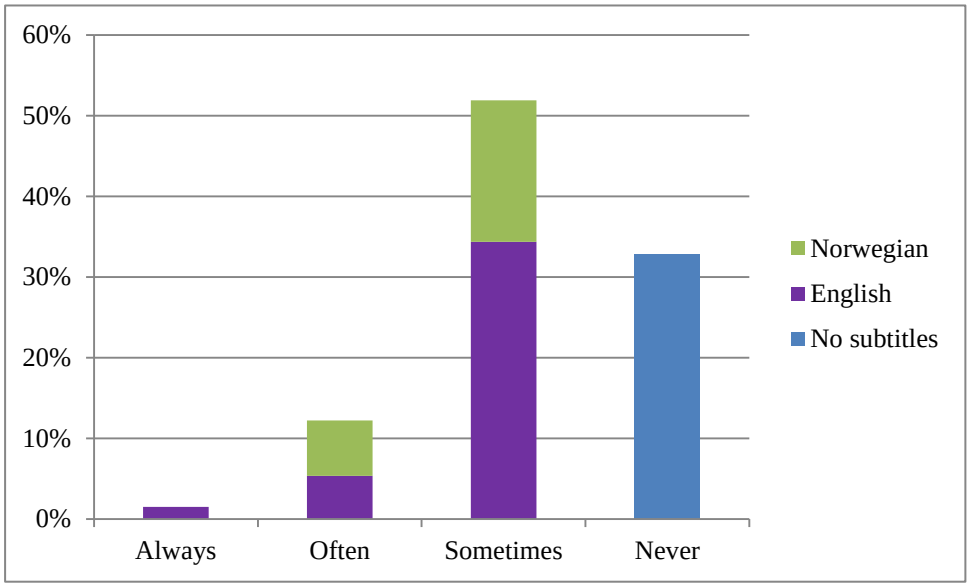

Figure 4: How often Norwegian participants reported using subtitles and which language they preferred

4.1.8 Motivation

Norwegian students were asked about their motivations for learning English (Figure 5). When asked if they thought knowing English was important for a future career, 68% said it was 'very important' and 21% said it was 'quite important'. Only 2% said they thought English was 'not important' for their future career. When asked if they thought knowing English was important for social or entertainment reasons, the response was even stronger, with 70% saying it was 'very important', 25% saying 'quite important' and no participants claimed that it was 'not important'.

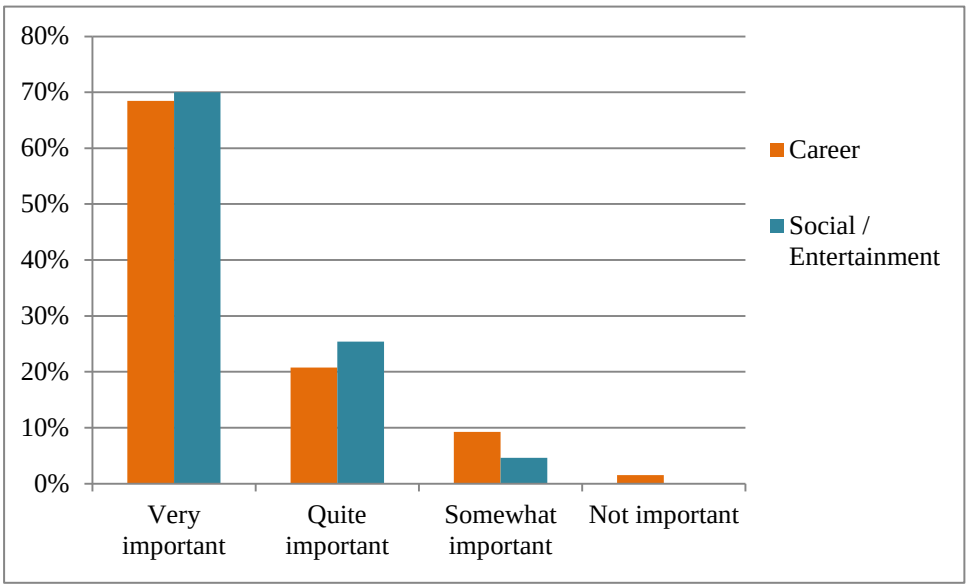

Figure 5: How important Norwegian students reported English to be for their future careers compared to importance for social/entertainment reasons

4.1.9 Perceptions of English language skills

Norwegian participants were asked to indicate how comfortable they felt when reading and writing in English. 64% of respondents said they felt 'totally comfortable reading in English', 34% said they could understand most things in English and 2% said they could understand when they really concentrated. When asked how comfortable they felt about writing in English, 43% said that they were totally comfortable writing in English, 48% stated that they were 'pretty comfortable' writing in English and the remaining 9% said that they could usually express themselves in English.

Norwegian students were asked whether they thought it took longer to read in English than Norwegian. More than half (62%) said that it definitely or sometimes did, and the remaining 38% did not think that the language made a significant difference to their reading speed.

4.1.10 Academic language

In order to find out more about what role academic language played in Norwegian students' English experience, participants were also asked whether they thought that the English they had learned in school prepared them for the English they encountered at university. Only 21% said they thought that it definitely had, 52% said that it had mostly been sufficient, 23% said that it had not really prepared them and 5% said that they did not feel prepared.

They were then asked whether they found it difficult to read academic texts in English and also whether they found academic texts difficult in Norwegian (Figure 6). More students indicated difficulties with reading academic texts in English than in Norwegian. For English, 52% said they 'definitely' or 'sometimes' had difficulty reading academic texts, whereas for Norwegian this was 34%. Only 14% said they had no difficulty reading academic texts in English, but more than twice as many (31%) said this about Norwegian academic texts.

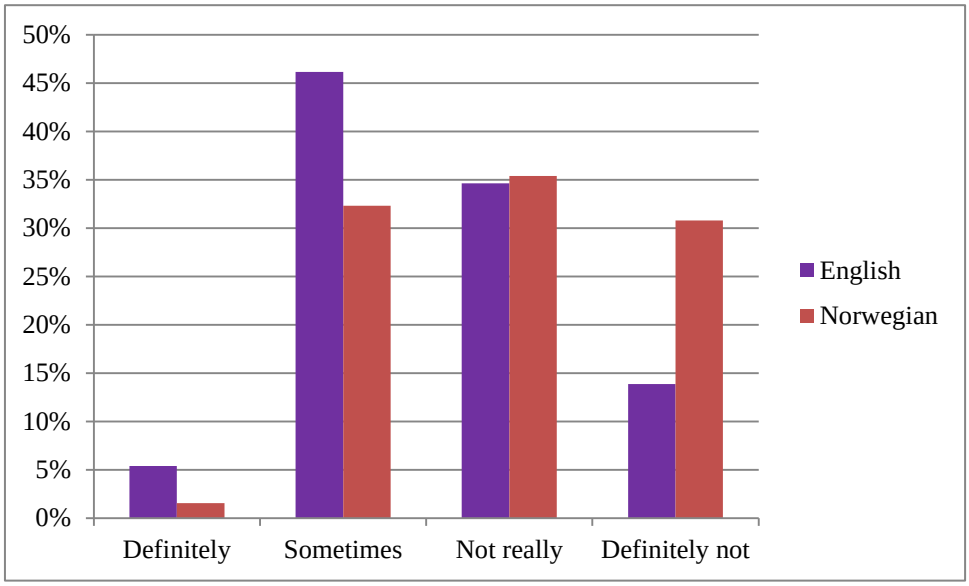

Figure 6: Norwegian students' responses to whether they considered it difficult to read academic texts in English and Norwegian

Interestingly, when asked about whether they would read more of the required course readings if they were in Norwegian, the majority of students said they would not (45%) or that it would make no difference to how much they read (35%). When asked if they would be more likely to read required course readings that were written in a more conversational style, 58% said that they would, 22% said that it would make no difference and 19% indicated that they would not. Australian students were also asked if they would be more likely to read

required course readings that were written in a more conversational style and 42% said they definitely would and 39% said that they sometimes would. Only 8% of the Australian students said they were not likely to read more and 11% said it would make no difference. The number of students who would read more in conversational language is shown in Figure 7 and the number of Norwegian students who would prefer to read in conversational language compared to the number who would prefer to read in Norwegian is show in Figure 8.

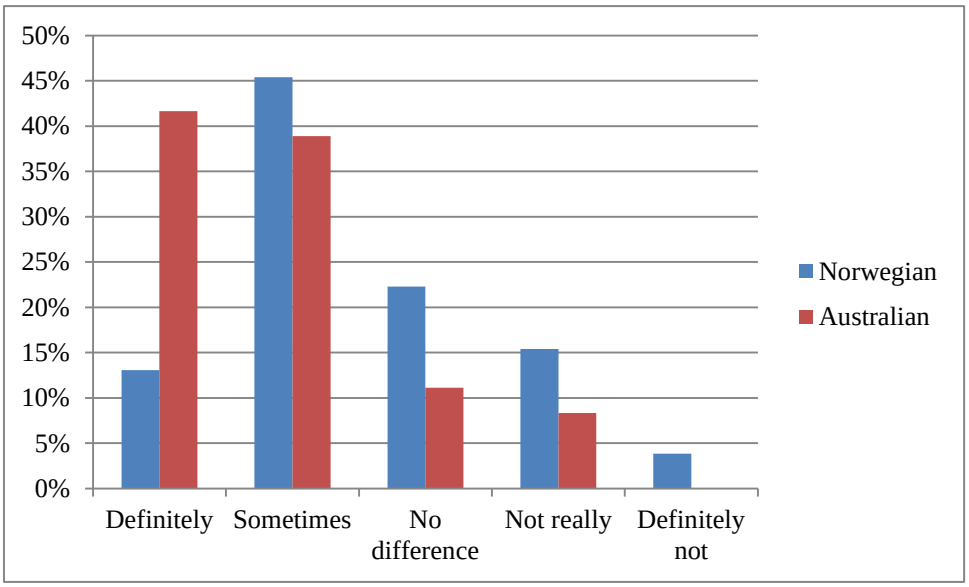

Figure 7: How likely Norwegian and Australian students thought they were to read more of the required course readings if they were written in a more conversational style

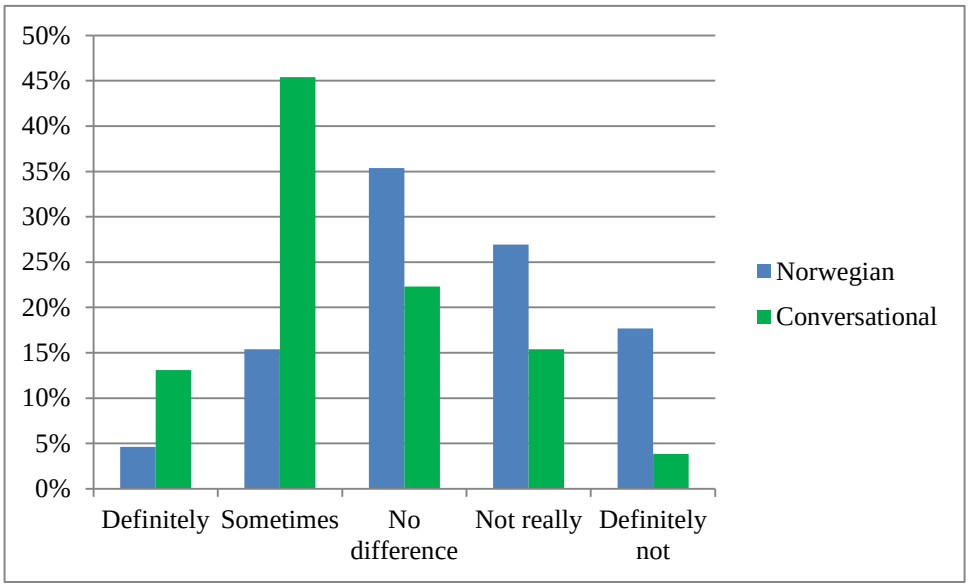

Figure 8: How likely Norwegian students thought they were to read more of the required course readings if they were written in a more conversational style compared to how many would read more if the readings were in Norwegian

4.2 Reading comprehension tasks

4.2.1 Time spent on reading tasks

The time taken on the reading comprehension tasks was compared between native Norwegian speakers studying in Norway and native English speakers studying in Australia (Figure 9 and Table 2). An independent-samples t-test was conducted to compare reading times in the academic language text between Norwegian and Australian students. There was a significant difference between the time taken for the Norwegian (mean = 430.8 seconds, SD = 155.29) and the Australian (mean = 349.1 seconds, SD = 144.04) students (t (164) = 2.84, p = 0.005). Another independent-samples t-test was conducted to compare reading times for the general language text. There was also a significant difference between the time taken for the Norwegian (mean = 390.5 seconds, SD = 125.87) and the Australian (mean = 314.5 seconds, SD = 102.58) students (t(164) = 3.33, p = 0.001).

Independent-samples t-tests also showed that there was a significant difference between the time taken by the Norwegian students to read the academic language (mean = 430.8 seconds, SD = 155.29) and the general language (mean = 390.5 seconds, SD = 125.87) texts (t(258) = 2.3, p = 0.022). No significant difference was found in reading times for Australian students between the academic (mean = 349.1 seconds, SD = 144.04) and general (mean = 314.5 seconds, SD = 102.58) language texts (t(70) = 1.175, p = 0.244).

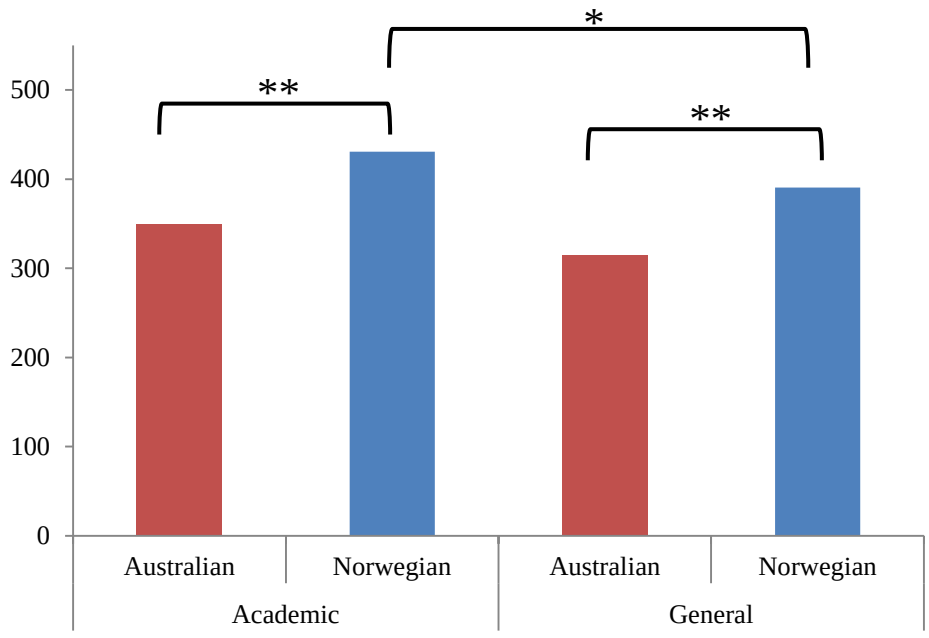

Figure 9: Time taken (in seconds) to read the academic and general texts by the Australian and Norwegian participants
Asterisks indicate significant differences (* indicates p < 0.05; ** indicates p < 0.005)

4.2.2 Reading comprehension

Participants were asked eight questions about each text; four to measure comprehension of the text and four to check vocabulary comprehension. Percentages of correct answers are shown in Table 2 and Figure 10.

4.2.3 Academic language text

Independent-samples t-tests were conducted to find whether there were significant differences between Australian and Norwegian participants in the average number of correct answers to the comprehension and vocabulary questions in the academic language text. No significant difference was found between the number of correct answers to the comprehension questions by Norwegian (mean = 3.13, SD = 0.87) and Australian (mean = 3.31, SD = 0.82) students ($t(164) = -1.08$, $p = 0.280$). There was, however, a significant different between the number of correct answers to the vocabulary questions by Norwegian (mean = 3.72, SD = 0.67) and Australian (mean = 3.97, SD = 0.17) students ($t(163) = -3.83$, $p = 0.000$). There was also a significant difference between the total scores (comprehension and vocabulary combined) for the Norwegian (mean = 6.85, SD = 1.18) and Australian (mean = 7.28, SD = 0.81) for the academic text ($t(164) = -2.02$, $p = 0.045$). For a summary of these results, see Table 2.

4.2.4 General language text

Independent-samples t-tests were conducted to find whether there were significant differences between Australian and Norwegian participants in the average number of correct answers to the comprehension and vocabulary questions in the general language text. No significant difference was found between the number of correct answers to the comprehension questions by Norwegian (mean = 3.25, SD = 0.89) and Australian (mean = 3.53, SD = 0.74) students ($t(164) = -1.74$, $p = 0.084$). There was also no significant difference between the number of correct answers to the vocabulary questions by Norwegian (mean =3.79, SD = 0.48) and Australian (mean = 3.86, SD = 0.35) students ($t(164) = -0.806$, $p = 0.421$). No significant difference was found between the total scores (comprehension and vocabulary combined) for the Norwegian (mean = 7.04, SD = 1.12) and Australian (mean = 7.39, SD = 0.84) participants for the general language text ($t(164) = -1.75$, $p = 0.082$). For a summary of these results, see Table 2.

Table 2: Reading times and percentage of correct scores for reading task questions for Australian and Norwegian participants and whether these differences were significant Asterisks indicate significant differences (* indicates p < 0.05, ** indicates p < 0.005)

		Australians	Norwegians	p value
Academic	Time (seconds)	349.1	430.8	0.005**
	Comprehension	83%	78%	0.280
	Vocabulary	99%	93%	0.000**
	Total Correct	91%	86%	0.045*
General	Time (seconds)	314.5	390.5	0.001**
	Comprehension	88%	81%	0.084
	Vocabulary	97%	95%	0.421
	Total Correct	92%	88%	0.082

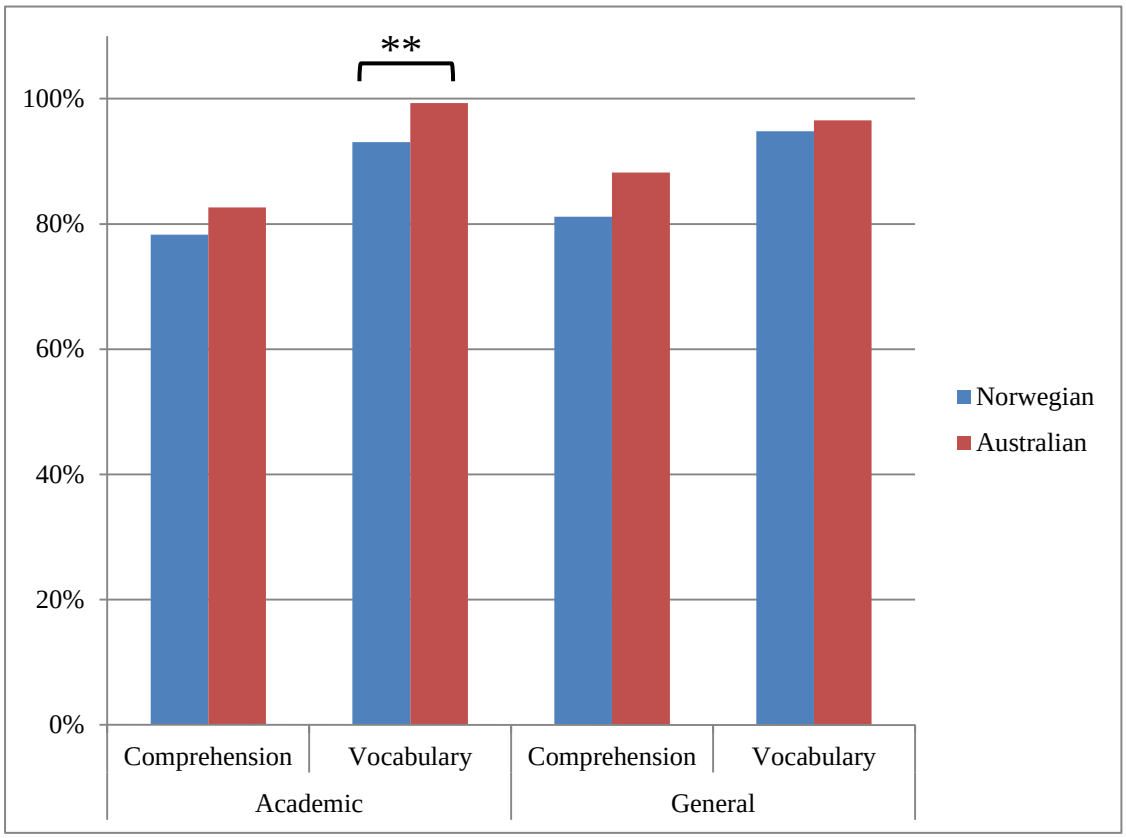

Figure 10: Average percentage of correct answers to the reading task questions for Norwegian and Australian students. Asterisks indicate significant differences (p < 0.005)

A Pearson's r test for correlation was run to determine whether there was a relationship between the time students took to answer the questions and how many questions were correct. For the Norwegian students there was a significant negative correlation between time and accuracy for the academic text ($r = -0.223$, $n = 130$, $p = 0.011$), indicating that some students were more fluent than others. Some appeared to quickly understand what they were reading and answered the questions correctly, and other students were seemingly less fluent and got more incorrect answers despite taking more time. No significant correlation was found between time and accuracy for the general text ($r = -0.103$, $n = 130$, $p = 0.246$) for these students. For the Australian students there was no significant correlation between time and accuracy for either the academic ($r = -0.197$, $n = 36$, $p = 0.249$) or general text ($r = -0.023$, $n = 36$, $p = 0.892$).

Tests using Pearson's r showed a correlation between reading times for the academic and general texts for Norwegian students ($r = 0.525$, $n = 130$, $p = 0.000$), i.e. that some people were faster readers than others on both texts. Tests also demonstrated that some Norwegian students were more accurate than others, with a strong correlation between the number of answers correct on the academic and general texts ($r = 0.380$, $n = 130$, $p = \leq 0.000$). Among Australian students there was a significant correlation between reading time in the academic and general texts ($r = 0.761$, $n = 36$, $p = 0.000$), but the correlation between the general and academic texts in accuracy of answers ($r = 0.088$, $n = 36$, $p = 0.608$) was not significant. There was also a strong correlation between vocabulary scores in the general text and academic comprehension scores among both Australian students ($r = 0.449$, $n = 36$, $p = 0.006$) and Norwegian students ($r = 0.179$, $n = 130$, $p = 0.042$), suggesting that a larger vocabulary may be associated with better comprehension of academic texts.

4.2.5 Individual words

The number of correct answers to each vocabulary item was calculated (Figure 11). Among Norwegian participants, *degree* had the fewest correct answers (87%) and *appendage* had the highest number (100%). This is interesting because *degree* is a (partial) cognate, and appendage is not a cognate with Norwegian (see section 2.3.1). The Australian students were able to identify *production, degree, account, sensation* and *appendage* with 100% accuracy, and scored lowest on *phantom*, which only 92% of students answered correctly.

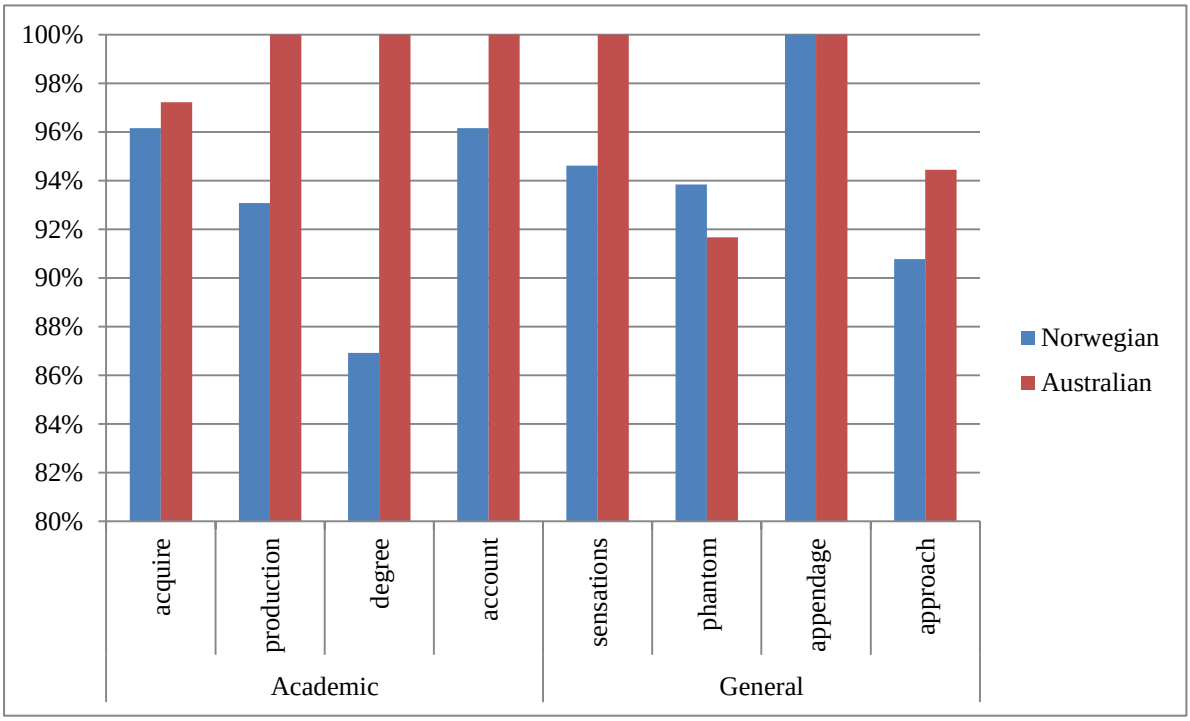

Figure 11: Percentage of participants who answered each vocabulary question correctly

4.2.6 Perceptions of reading comprehension

At the end of the survey, participants were asked to rate the academic and the general language texts according to how easy they were to read. For the academic article, 37% of Norwegian students reported that they found the reading 'very easy' or 'quite easy', 38% said it was 'okay', and 25% said it was 'quite difficult' or 'very difficult'. For the same article, 44% of Australian students judged it as 'very easy' or 'quite easy', 28% said it was 'okay' and 28% said it was 'quite difficult'. For the general language article, 68% of Norwegians rated the reading as 'very easy' or 'quite easy', 28% said it was 'okay' and only 4% said it was 'quite difficult' or 'very difficult'. More Australian students judged the general language article to be 'very easy' or 'quite easy' (58%), 39% rated it as 'okay' and only 3% said it was 'quite difficult'. For details, see Figure 12.

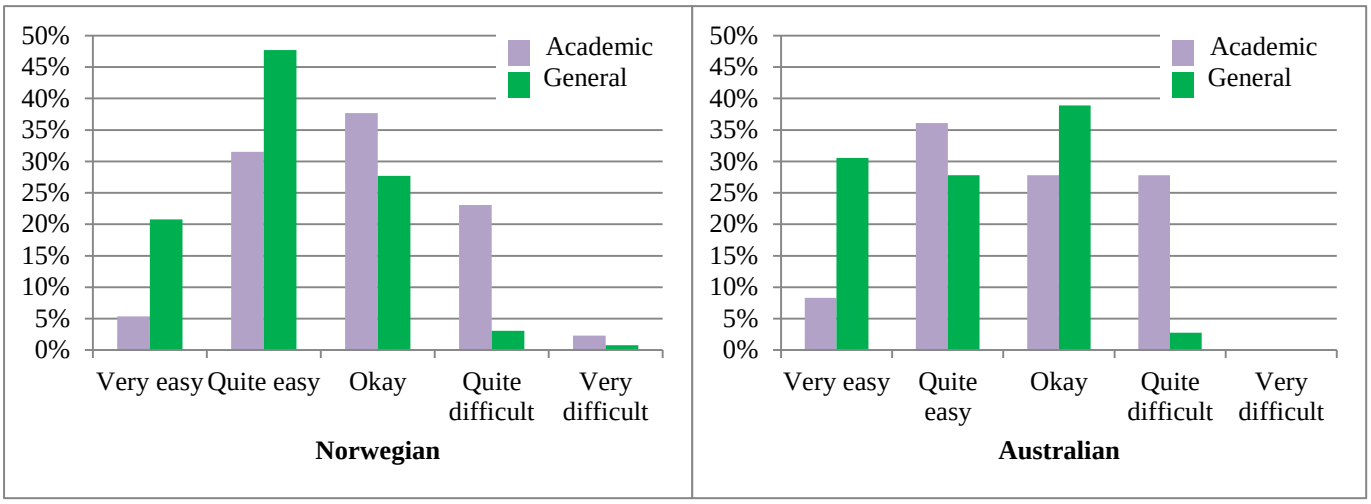

Figure 12: Perceptions of ease of reading of the academic text and the general language text by Norwegian and Australian participants

Participants were also asked whether they were more confident about their answers to the academic or the general language text. Results indicate that the majority of people in both groups felt that they answered the general language questions correctly. For the Norwegian students, 15% felt more confident about their answers to the academic text, 56% thought they got more correct answers for the general language text and 29% felt equally confident about both. For Australian participants, 22% felt more confident about the academic text, 56% felt better about the general language text and 22% felt they were equally confident about both.

Tests using Pearson's r showed a correlation between scores on academic comprehension and the perceived easiness of the academic reading ($r = 0.181$, $n = 130$, $p = 0.039$) for Norwegian students. There was also significant correlation between the perceived easiness of the general language reading and accurate answers to the general language comprehension questions ($r = 0.300$, $n = 130$, $p = 0.001$) and also the total correct answers ($r = 0.272$, $n = 130$, $p = 0.002$) for the Norwegian students. No significant correlations were found between perceived easiness of text and accuracy of answers for the Australian students.

For the Norwegian students, there was also a significant correlation between the rating of ease of reading the academic article and the general article ($r = 0.458$, $n = 130$, $p \leq 0.000$), indicating that participants tended to find both articles easy or both hard.

4.2.7 Reading strategies

In order to find out more about reading strategies, participants were also asked whether they looked up the meaning of any words while they were reading the texts. Twenty (15%) of the Norwegian participants admitted to having looked up at least one word while reading, and 3 participants said they had looked up three or more words. Two (6%) Australian participants also looked up at least one word while reading.

4.2.8 Factors correlated with reading scores

Pearson's r tests were also run to look for correlations between time and accuracy and other factors which might have an impact on English knowledge. No significant correlation was found between the amount of time the Norwegian students had spent abroad and their reading times or percentage of correct answers. There was also no significant correlation between age of participants or number of subjects completed with timing or accuracy.

12 participants had taken at least one English class at university, but there was no significant correlation between this and either timing or accuracy on the reading tasks.

4.2.9 Gender effects

Independent-samples t-tests were run to compare male and female Norwegian participants on time taken for reading and number of correct answers to the comprehension and vocabulary questions (see Figure 13). Female participants (mean = 3.62, SD = 0.81) scored significantly higher than males (mean = 3.87, SD = 0.34) on the vocabulary questions for the academic text ($t(128) = -2.07$, $p = 0.041$). Female Norwegian students (mean = 3.10, SD = 0.93) also scored significantly higher than their male peers (mean = 3.45, SD = 0.81) on the comprehension questions for the general language text ($t(128) = -2.23$, $p = 0.027$). There were no significant differences between Norwegian males and females for the vocabulary questions in the general language text or the comprehension questions for the academic text. There were also no significant differences in reading time for these groups.

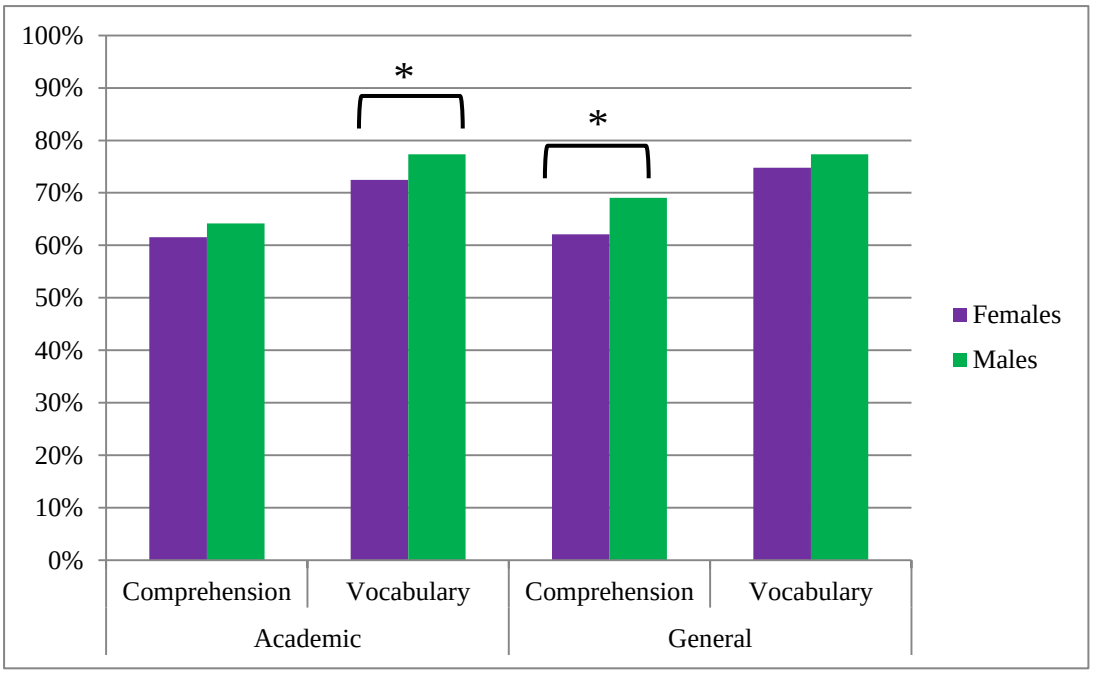

Figure 13: Percentage of correct answers to the comprehension and vocabulary questions by Norwegian students grouped by gender
Asterisks indicate significant differences ($p < 0.05$)

5 Discussion

The purpose of this study was to determine how well Norwegian university students were able to read academic English compared to general English and to learn whether this was significantly different from native English speakers, as the expectations of English proficiency at university are similar for the two groups. The study also aimed to identify sources of information about English for these students, how important they considered English to be, and whether they felt that the education they had received at school was sufficient to prepare them for the language they encountered at university. This chapter will discuss the findings from the self-report questionnaire that relate to the perceived importance of different sources of English information before discussing the results of the reading comprehension tasks. The motivations for learning English are then discussed as well as the students' perceptions of their own proficiency and the aspects of language that matter most to their understanding. Finally, the limitations of this study are discussed along with suggestions for future research.

As anticipated, English language readings were extremely prevalent in the Norwegian higher education curriculum. All but one of the Norwegian students surveyed said they had at least some English texts to read as part of their university curriculum, and nearly half of the participants had over 75% of readings for their university coursework in English. This high percentage of English in the university curriculum is in line with other Nordic countries such as Iceland (Arnbjörnsdóttir & Prinz, 2013), Sweden (Shaw & McMillion, 2008) and Denmark (Jensen & Johannesson, 1995).

5.1 Sources of information about English

One of the main objectives of this study was to identify where Norwegian students felt they were learning English from. Almost all the Norwegian participants (97%) said that they had been learning English at school for at least 8 years. The Norwegian national curriculum states that English is taught from year 1 until at least year 11 (Utdanningsdirektoratet, 2013), but 27% of students claimed they had had less than 10 years of English lessons at school. This may be because the starting age for teaching English was only lowered in 1997, and because there is some flexibility in lesson planning, especially in the first few years of school, depending on individual teacher proficiency and confidence in English (Norwegian Ministry

of Education and Research, 2004). Students may also have lived in other countries for part of their childhood, or English lessons in the first years of school may not have been especially memorable. For many students, it had been a long time since their last school English lesson. It had been 5 years or more for 28% of the participants, and for 42% it had been 3 or 4 years, which is perhaps not surprising as it is possible to finish English education after year 11 and many of the participants had been at university for several years.

Interestingly, when asked how important they thought English lessons at school had been to their knowledge of English, only 13% rated this as 'very important', which was lower than any of the other options given other than 'reading articles online'. Media, books, gaming and even reading textbooks were rated by more participants as 'very important'. It is difficult to know whether this is due to suboptimal English teaching in schools or to the high levels of exposure and motivation via English language media, but it does appear to be reflected in other studies. Bonnet (2004) found that16 year old Norwegian students attributed, on average, 52% of the English they knew to school lessons and 34.5% to media. This was a higher percentage of English knowledge attributed to extramural English exposure than for students of any of the other 5 countries included in the survey. The other 13.5% was attributed to unspecified 'other ways', but would presumably also be sources outside of formal education. Henry (2014) describes the results of a survey which found that more than half of Swedish 16 year old students believed they were learning more, or at least as much English outside of school than from school lessons, and 16% reported believing that they had learned nearly all of their English outside of school.

It was interesting to note that nearly 60% of Norwegian participants in the current study considered reading textbooks and articles for school to be an important contribution to their knowledge of English, and these could be an important source of academic English in particular. Previous studies of students at a Swedish university found that even though the majority would prefer to read textbooks in their L1 than in English because it would be less demanding, three-quarters of the students did recognise that they benefited from English language readings as a source of vocabulary related to their field of expertise (Pecorari et al., 2011). The students in Pecorari et al's (2011) study were not all native speakers of Swedish and some also commented that having textbooks in English meant that, as there were no

native English speakers in their class, they felt the learning situation was fairer because the whole class had to read in an L2.

Almost a third of students in this study said that they felt their school English lessons had not prepared them very well for the English they encountered at university. Most students acknowledged that school had a role in their knowledge of English, but only 21% of students said that they felt their school lessons had definitely prepared them for the language they encountered at university. Tovazzi (2011) found that older students were more likely to report classroom teaching as being important to their knowledge of English, whereas younger students tended to cite computer-related sources. She proposes that school lessons used to be stricter, with higher expectations in the past than today.

It is important to bear in mind that these are self-reports, which are subjective. Although it is possible that a second language can be learned to some degree from extramural exposure alone (Sorescu-Marinkovic, 2010), it is likely that the subjects of this study would have had more trouble learning from exposure to English outside of school if they had not first been taught the basics of the language in the classroom.

No participants considered either school lessons or English language movies and TV programs to be irrelevant to their knowledge of English. Movies and TV shows were the sources of English considered ‘important’ or ‘very important’ by the highest number of participants, a finding that is not surprising given their ubiquity and the fact that they significantly outnumber Norwegian language sources of entertainment. Only a limited number of programs on Norwegian television are in Norwegian (MCG Media Consulting Group, 2009), and a very large proportion are in English.

Nearly half (43%) of the participants in this study said that communicating with people online in situations such as playing digital games was important to their knowledge of English. This fits with studies showing that playing electronic games in English is associated with higher levels of English language proficiency (Rankin et al., 2006; Reinders & Wattana,

2011, 2014; Sundqvist, 2009; Sylvén & Sundqvist, 2012). Previous studies have put forward a number of factors that might be responsible, including the opportunities for interaction in the L2 (Sylvén & Sundqvist, 2012), the inclusive nature and support offered within the gaming environment (Reinders & Wattana, 2011), exposure to new vocabulary (Rankin et al., 2006) and motivation (Reinders & Wattana, 2011).

More than half of the participants said that 50% or more of the books they chose to read in their spare time were in English, and the majority of those said that 75% or more of what they chose to read was in English. As mentioned in section 2.3, Hirsch and Nation (1992) proposed that readers need to understand at least 98% of the words in a text in order to enjoy reading. They calculated that, for unsimplified texts, this equated to a vocabulary of at least 5000 word families. Almost all Norwegian participants (90%) reported reading at least some books in English in their spare time, indicating that the participants probably have, on average, a fairly large vocabulary in English, at least in general language.

A survey in 2004 showed that the majority of 16-year-old students (53%) used subtitles when watching television programs in English (Bonnet, 2004). In the current study, only 2% of participants said they always needed subtitles when watching English language television and movies and 12% said they often did. More than half of participants in the current study said they only sometimes used subtitles and 33% said they never needed to rely on subtitles. This seems to indicate that fewer people in the current survey are using subtitles compared to those in the previous study and may suggest a shift towards greater competency in and familiarity with English. Although the participants in the current study were older than the secondary school students, many of them would not have had much more formal training in English since they were 16, as English is only compulsory until year 11. It may be that students are being exposed to more English now than a decade ago and this is contributing to higher levels of proficiency and confidence in understanding spoken English.

It was interesting to note that the Australian participants in this study reported reading significantly more books in their spare time than the Norwegian participants did. This may be related to sampling issues, such as the fact that a larger percentage of them were humanities

rather than science students. It could also reflect slower reading rates among Norwegian students since a high percentage of the books they report reading are in English (they may dedicate similar amounts of time to reading, but finish fewer books).

5.2 Results of the reading tasks

5.2.1 Time spent on reading tasks

All students took longer to read the academic text (average of 390 seconds) than the general language (353 seconds) text, even though the general language text was slightly longer. This suggests that the academic text was harder to read (or at least more time-consuming) than the general language text. The difference was significant for the Norwegian student sample. The difference between the average academic and general language text reading times for the Australian students was not significant, suggesting that they had less trouble with academic reading in particular compared to the Norwegian students. The difference between the academic and general reading times for the Australian students (35 seconds) was only 5 seconds less than for the Norwegian students (40 seconds), so a smaller sample size and/or higher standard deviation may have also contributed to a non-significant result for the Australian sample, although both groups were large enough for parametric testing.

There was a significant difference between the Australian and Norwegian participants in reading times for both the academic and general texts. Overall, the Australian students completed the reading tasks in 80.8% of the time that it took the Norwegian students. This fits with previous research that has shown that reading in L2 is slower than in L1 (Shaw & McMillion, 2008), even in cases of high L2 proficiency (Fraser, 2007). This is of concern when considering these populations are likely to be using the same textbooks (Shaw & McMillion, 2008) and are expected to learn the same amount of information in the same amount of time.

The average difference between the Australian and Norwegian students in time taken to read the academic text (81 seconds) was significantly greater than the time difference for the general text (76 seconds). This suggests that Norwegian students may be closer to native speaker proficiency in general language reading than in academic language reading, which

fits with the prediction that less exposure to academic language would be associated with less fluency in reading academic language. The longer time taken by Norwegian students to read academic language means that they may be increasingly challenged when faced with reading large quantities of academic English in a limited time frame. In native English speaking countries, some classes offer L2 English speakers additional time on exams (ANU, 2015), and Norwegian students might also benefit from this.

5.2.2 Comprehension

Interestingly, there was no significant difference between the Australian and Norwegian students in the percentage of correct comprehension questions for either the academic or the general language texts. This is initially surprising in light of suggestions from other research that the reading comprehension of L2 speakers is not as good as that of L1 speakers (Gunnarsson, 2001). This may indicate that the particular texts chosen for this study were not sufficiently complex to reveal a difference between native and non-native English speakers. However, the proportion of words in the academic text that appear in Coxhead's (2000) AWL was approximately equal to that found in the Academic Corpus in her study and therefore should be representative of the typical language found in academia. It is therefore encouraging in terms of learning outcomes for Norwegian students, as it suggests that even though they may not understand all the vocabulary they encounter and also take longer to read, they are probably able to get the same amount of information, given enough time. Additional reading time may compensate for slower language processing and ensure that the content is understood eventually (Pecorari et al., 2011).

It is perhaps not improbable that the Norwegian students would have similar comprehension scores to native speakers given that they were able to take as much time as they needed. Shaw and McMillion (2008) found similar levels of comprehension in L1 and L2 speakers when time was unlimited, but when native and non-native speakers were allowed the same amount of time for reading, the L2 readers had significantly lower comprehension scores. At a high level of proficiency, the main cost of reading in a L2 is time rather than comprehension (Pecorari et al., 2011). In some ways, a timed reading test might give a more accurate indication of how Norwegian students cope with academic English because they are expected to learn the same amount of information as native speakers within the time allotted for their

degree. The current study highlights the slower reading of Norwegian students, but future studies could investigate whether this slower reading would make a difference to comprehension in a time-restricted environment.

The unlimited time did not necessarily help all students to answer questions correctly, however, and there appeared to be some variation in the Norwegian students' English proficiency. A significant negative correlation between time and accuracy in answering questions about the academic text indicated that some Norwegian students were more fluent than others. Students who took less time were more likely to answer the questions correctly, while students who took more time to answer the questions were also more likely to get them wrong. This only seemed to apply to the academic language questions for Norwegian students, and no significant correlations were found between time and accuracy for the general text for Norwegian students or for either text amongst Australian students. This suggests that when there are gaps in vocabulary knowledge, additional time was not able to help the Norwegian students to guess the meaning correctly.

5.2.3 Vocabulary

This study found a significant difference between Norwegian and Australian students in number of vocabulary items correctly identified in the academic text. Vocabulary learning is known to be one of the key challenges for learners of English as a foreign language (Laufer, 1992; Laufer & Sim, 1985), and the vocabulary found in academic language is known to be particularly difficult (Vongpumivitch et al., 2009). However, there was no significant difference between the two groups in the number of correct answers to vocabulary questions in the general language text. This could be a reflection of where the Norwegian students are learning their English. Nearly 90% of Norwegian students in this survey said that movies and TV shows were an important source of information about English and these, along with other extramural sources of English exposure, could be responsible for the native-like levels of general vocabulary knowledge.

Given that the 'vocabulary' questions were asking for the correct synonym in the context of the text rather than a definition of the word, these questions were testing specific

comprehension of a small part of the text rather than vocabulary knowledge per se. As there were no significant differences between Norwegian and Australian students in the general comprehension questions, it seems that the Norwegian students are understanding the basic message of what they read, but could still be misunderstanding some details. This is potentially problematic for both understanding and also producing academic English.

A significant difference was found between male and female Norwegian students in this study for the percentage of correct answers to the vocabulary questions in the academic text and there was also a significant gender difference for the percentage of correct answers to the comprehension questions in the general language text. This fits with other studies showing that females score higher than males on measures of language proficiency (Bonnet, 2004). It is important to bear in mind that the proportion of males and females was not balanced in this study. There were more females than males in both the Norwegian and the Australian samples. The number of male participants in the Australian sample of this study was not sufficiently large to perform statistically significant tests, but it could be worth investigating gender differences in academic language for L1 and L2 speakers, especially since males report learning more English from extramural sources and females report learning more from school (Henry, 2014; Sundqvist, 2009). It may be, therefore, that females might outperform males in academic English proficiency.

5.2.4 Individual words

In light of the fact that cognates have been shown to help with language learning (d'Ydewalle & Van de Poel, 1999; Ittzes, 1991; Lindgren & Muñoz, 2013), it was anticipated that the Norwegian students would be more successful in identifying vocabulary items that were cognates with Norwegian words. This did not appear to be the case, however, with *appendage, acquire* and *account* (which are not cognates with Norwegian) being correctly identified by the most Norwegian participants and *degree* (which is a partial cognate) being correctly identified by the fewest. The words used in the vocabulary questions were all of Latin origin, meaning that no words should have been more familiar to the Norwegian students than others on account of common Anglo-Saxon origins.

In analysing these results, it is also important to consider the alternative answers in the multiple choice questions. It may be that the alternatives to *appendage* were obviously incorrect, as no Australian students answered this item incorrectly. However, the Australian participants all identified degree correctly, so this may not explain everything. The mostly commonly selected incorrect alternative for *degree*, as selected by 9% of Norwegian respondents, was *measurement*, which perhaps made some sense in the sentence in question ('Evidence of what is normative would address the much-debated question of the *degree* to which language acquisition is paced by biology versus experience'). The definition of the Norwegian cognate *grad* covers less ground than the English word, so it is possible that the Norwegian students were misled by the word similarity, as has been shown to occur in other studies (Ittzes, 1991). It is also possible that Norwegian students were unfamiliar with the correct synonym, which was *extent*. The Norwegian expression '*i noen grad'* translates to '*to some degree/extent'*, so it is possible to use this expression in English without knowing, or using, *extent*. It seems unlikely that Norwegian students would be unfamiliar with the word *extent*, but it would certainly be difficult to understand academic texts without understanding this word.

Of the words to be identified in the vocabulary questions only two, *acquire* (in the academic text) and *approach* (in the general text), are listed in the AWL, which makes it surprising that there was as significant difference between vocabulary scores for the academic and general language text for the Norwegian students. Whether a word is classified as 'academic' according to the criteria used by Coxhead (2000) may not be the only factor predicting vocabulary comprehension. A number of studies have shown that context is extremely important in understanding individual words (Ittzes, 1991; Nagy et al., 1985; Shaw & McMillion, 2008). It is possible that an understanding of the surrounding text helped with correct identification of individual words.

The survey was designed to simulate the normal reading situation as realistically as possible for the students. Therefore, students were not discouraged from looking up the meanings of words, in the hope that their approach to reading the texts in this study was similar to their approach to reading texts for university. Participants were asked at the end of the survey whether they had looked up the meaning of any words. Two Australian participants (6%) and

20 Norwegian participants (15%) admitted to looking up words. Unfortunately, it is not known which words were researched and whether they were looked up in order to gain a general understanding of the text or to answer the specific vocabulary questions, although this would be an interesting topic for future research.

5.3 Perceived importance of English and motivation for learning it

As expected from the research (Bonnet, 2004), English was widely regarded as important by the Norwegian participants in this study. More of the respondents classified English as important for social and entertainment reasons than for their future careers. No participants regarded English as unimportant for social or entertainment reasons, although a small number of participants considered it unimportant for their future careers. This might be a reflection of the fact that, although it is possible to work in an organisation where business is conducted entirely (or at least mostly) in Norwegian, it is difficult to imagine never interacting with people who do not speak Norwegian or never engaging with movies, books, music and other forms of entertainment which are only in English.

Motivation plays a large role in second language acquisition (Reinders & Wattana, 2011; Sylvén & Sundqvist, 2012), and the fact that almost all participants reported viewing English as vital for social and entertainment reasons probably contributes to their high level of proficiency. Bonnet (2004) found that understanding English language television programs without subtitles was considered to be an important motivation for learning English by the highest percentage of surveyed 16 year old Norwegian students. Communication abroad and comprehension of music texts were also considered to be very important factors.

This study found that Norwegian students use English to communicate with people in other countries, with 84% saying that they had travelled to places where they used it as the main language of communication. The countries where participants used English the most were English-speaking countries such as the United Kingdom, United States and Australia, but many destinations were listed where English is not an official language, indicating that English is being used by these students as a lingua franca. Eight of the participants had lived for more than a year in places where they used English as the main language for

communication and three of the participants had spent more than two years in places where they mostly used English. This fits with studies showing that English is used around the world to enable cross-cultural communication (Altbach, 2007; Baldvinsdóttir, 2011; Dovring, 1997; Hellekjær, 2012; Mauranen et al., 2010).

As well as its use when travelling, English also appears to be commonly used by the majority of Norwegian students (67%) while in Norway for communicating with friends and/or partners from abroad. Writing for an international audience was also a popular use for English, with 56% of participants saying they do this. More than half (51%) also reported using English with non-Norwegian speaking university staff, which was one of the reasons for increased use of English in the Norwegian university system predicted by Brock-Utne (2001). Nearly half of the students (41%) also reported needing to write in English for assessment items such as assignments or exams.

Most Norwegian participants in this study said that they wrote in English at least sometimes, with only 15% saying that they almost never write in English. Previous research has shown that people in Nordic countries are exposed to more English than they produce themselves. For example, Arnbjörnsdóttir (2011) found that although nearly 90% of the surveyed Icelandic population heard English every day, only a fifth spoke it every day, and for many it was only once a month or less. The proportion of productive to receptive English use seems to be more balanced in Norway. This could reflect higher levels of English use in Norway, but it could also be because the participants in the current study were students, often studying in English, and probably younger on average than the adult population surveyed in the Icelandic study.

5.4 Perceptions of own skills

There was a general perception among both Australian and Norwegian students that the general language text was easier to read than the academic text. The Australians rated both texts as easier than the Norwegians did on average, and no Australians rated either text as ‘very difficult’, although a small percentage of Norwegians did. Approximately three times as many participants in both groups felt more confident about their answers to the general

language text than the academic one, although there was a higher proportion of Australian participants than Norwegians who thought they did equally well on both. This indicates that academic language is perceived to be more difficult to read, regardless of the environment in which it is encountered – in other words, textbooks are not difficult only because students feel that they have no choice about reading them. It also demonstrates that academic language is challenging even for students reading in their native language.

A number of measures demonstrated that some Norwegian students are more fluent in English than others. For the Norwegian students there was a significant positive correlation between the perceived easiness of the reading and the percentage of comprehension questions they answered correctly. There was also a significant correlation between the perceived easiness of the academic and the general text for the Norwegian students; that is, some found both texts easy, and others struggled with both. There were significant correlations between reading times for the two texts and the level of accuracy for Norwegian students. Results from the Australian students showed a significant correlation for timing for the two texts but not for accuracy.

In terms of educational background, the Norwegian students in this study reported much higher levels of education for their parents, on average, than the Australian students. Studies have shown that parents' educational experience and expectations can affect the academic success of the children and that children whose parents regard education as important tend to do better at school (Hao & Bonstead-Bruns, 1998). Therefore, a group of Australian students whose parental educational background included the same proportion of tertiary qualifications as did the current sample of Norwegians students may have demonstrated an even greater difference in English proficiency. It should be noted, however, that the average amount of time that Australian students had spent at university was slightly higher than the average for the Norwegian sample (possibly at least partly due to the academic calendar starting at different times of year in different hemispheres), meaning that the Australian students may have had more time for exposure to academic language at university.

Norwegian participants were asked how comfortable they felt about reading and writing in English. Reading in English was found to be easier than writing, according to self-reports, with 64% of participants stating that they were totally comfortable reading in English, compared to 43% who said the same for writing. Very few participants considered themselves to have difficulties in either reading or writing English, although 9% selected the lowest self-report option for writing English. Despite a demonstrated confidence in their English proficiency, more than half (62%) of Norwegian participants still considered their reading in English to be slower than their reading in Norwegian. This reflects the findings from the timing of the reading task in this study, and further demonstrates that, although Norwegian students are highly proficient in English, they are still not the same as native English speakers in terms of proficiency.

5.5 What would make it easier

Only 20% of the Norwegian students claimed that they might read more of the required course readings if they were in Norwegian, and only 5% were definite about this. This suggests that the students do not consider themselves to be struggling with English. It might also tie in to the belief (as seen above in section 5.3) that English will be important in their careers (as seen in this study, and also Nunan, 2003; Pecorari et al., 2011), and therefore that it is important to learn it well. Results from this survey indicate that many Norwegian students feel that they are learning English when they read textbooks and articles for university, and the terms and expressions that they are learning from these are likely to be relevant for their future work in their chosen field.

Almost two-thirds of Norwegian students said that they thought they would read more of their course readings if they were written in a more conversational style. This is three times as many as said they would prefer to read university texts in Norwegian. This indicates that when it comes to reading, it seems to be the style of writing that matters more to Norwegian students than the language. The fact that so many students thought that they would do more reading if it were written in a different style could be a reflection of the fact that academic language appears to be more challenging than general language in terms of vocabulary knowledge and the time taken to read it. The Australian participants were even more enthusiastic about the idea of a more conversational writing style than the Norwegians, with

more than 80% saying they would prefer this. This suggests that even native English speakers find academic English more challenging than general English, even if the differences in timing and test scores between the styles were not significant in this study.

5.6 Limitations of this study and suggestions for future research

There are several factors that should be taken into consideration when attempting to generalise the results of the reading tasks to the general population. The smaller sample of Australian students does make it difficult to compare the two nationalities, although both groups were large enough to conduct parametric tests. The participants were not sampled randomly but volunteered for the study and, while every effort was made to emphasise that participants were welcome regardless of their English proficiency, there is no way to guarantee that there was not a bias towards people who were interested in, and therefore possibly more proficient in, English. The design of the survey may also have favoured the Australian students, as there is a stronger tradition of multiple-choice tests in the Anglo tradition than the Scandinavian (Shaw & McMillion, 2008), although this is unlikely to have made a significant difference over only 16 questions.

The IELTS test has academic and general versions. It was tempting to use the Academic version of the IELTS test to quantify English proficiency, so as to re-create more accurately the studies conducted by Hellekjær (2005) and to see whether English proficiency had changed over time, or whether students who had been at university longer would fare better. The present study, however, was testing native speakers as well as Norwegian students and initial pilot testing revealed that the texts in the IELTS exams were too simple for not only the Australian students but also the Norwegians students. Preliminary testing also demonstrated that there was little difference in the proportion of words from the AWL in the academic and general IELTS texts, meaning that it would have been difficult to make the connection between the academic version of the text and the type of language students encounter at university. It would be interesting, however, to recreate Hellekjær's (2005) study now that the prevalence of English has increased even further, to see if there is an improvement in English knowledge among Norwegian students starting university.

Academic language is not only defined by vocabulary. Sentence structure and complexity are also clearly important. The texts in this study were selected because they both described the results of research studies and matched the respective proportions of words from the AWL for general and academic texts. There were some other ways in which the texts differed, however, which may have contributed to the perceived and/or actual difficulty in reading. Firstly, the average number of words per sentence in the academic text was 30.8, which is considerably higher than the 21.1 words per sentence found in the general text. There was also a considerable difference in the number of passive sentences (as calculated by Microsoft Word), with the academic text containing 31% passive sentences and the general text containing only 3%. These factors could have contributed to slower reading and higher perceived difficulty, but probably had less impact on the answers to the vocabulary questions.

Word collocations are also important in distinguishing academic from general language, and the word combinations that distinguish academic text often consist of words which are not found in Coxhead's AWL (Durrant, 2009). Homonyms are another confounding factor in quantifying academic language. Vongpumivitch et al. (2009) point out that some words in the AWL have multiple meanings, some of which are more common in general language and not specific to academic texts such as *found* (to bring into existence/discovered) and *tense* (to be stretched or nervous/verb form indicating the time an action took place). This study took advantage of homonyms in testing vocabulary knowledge, but it would also be a potential complication when calculating the proportion of academic words. In short, finding or creating texts that were completely matched for all factors, or even all vocabulary factors, would be extremely complex, and beyond the scope of this study. This study focused on the proportion of words from the AWL, but other aspects of academic language would also be interesting to compare.

There are a number of other ways to investigate English proficiency and to compare academic and general language comprehension, many of which would be interesting to explore through future research. One confounding factor in this study is that the two texts describe different information, meaning that one may contain more information than the other or that prior knowledge or interest could play a role. It also means that the comprehension and vocabulary questions would never be entirely comparable. If a text were re-written using

more or less academic language, and students were presented with one or the other at random, it could lead to clearer conclusions. Also, it would be interesting to compare the students' knowledge of English compared to their first language by using texts in Norwegian to see whether there is a significant difference in timing between L1 and L2. It would also be interesting to know whether students who read faster in Norwegian also read faster in English, as there is evidence for transfer of reading skills from L1 to L2 (e.g. Cummins, 1979; Royer & Carlo, 1991).

Another consideration is the length of the reading texts. This study showed significantly slower reading times for Norwegian students than native English speakers even in short texts but, given that L2 reading is cognitively demanding, and even proficient L2 users take longer to read in a second language (Fraser, 2007; Shaw & McMillion, 2011), it is likely that they would also tire more rapidly than students reading in an L1. In order to gain an even clearer picture of the effects of L2 reading at university, longer texts, such as entire academic articles, could be used to investigate whether these effects are compounded over longer periods of reading.

Further investigation into extramural English exposure among Norwegian students may also be interesting. Previous studies have demonstrated that the interaction and motivation that comes with playing digital games in English can contribute to language acquisition (Rankin et al., 2006; Reinders & Wattana, 2011, 2014; Sundqvist, 2009; Sylvén & Sundqvist, 2012), but the majority of these studies have been conducted on populations younger than university students. It would be interesting to know whether there is any link between the language that can be learned through games and the language that students encounter at university.

6 Conclusions

This study demonstrates that when it comes to academic language, such as that encountered at university, Norwegian students take significantly longer to read, and correctly identify fewer vocabulary items than native speakers, even in a very short text with very few questions. This is not at all surprising considering that it is not their first language, but it does have some worrying implications for their ability to cope with university studies in English where the texts they are expected to read are far more substantial. The results from this study are in line with previous studies (Hellekjær, 2005, 2009) demonstrating that Norwegian students appear to have difficulties with the language of academia.

This study suggests that Norwegian students are not struggling with general English, with many reporting choosing to read books, watch movies and play games in English in their spare time. In the reading tests they demonstrated a good understanding of general English vocabulary which was not significantly different from the native speaker controls. This is likely be a reflection of where they have learned English from, with the majority citing extramural activities as a more important source of English than school lessons. Even within the school system, English lessons focus on training students to read and understand normal English prose rather than academic language (Gunnarsson, 2001), and learning the language itself is different from using the language to learn new concepts. Two-thirds of the Norwegian students in this study said they would prefer to read school books that were written in a more conversational style, but fewer minded which language they were in. This suggests that it is the academic nature of the language encountered at university that is causing students to struggle.

The fact that academic achievement is linked to language proficiency (Hill et al., 1999; Kerstjens & Nery, 2000) means that it is important that students are taught in a language that allows them to benefit the most from the education being offered (Cummins, 1984). If students are struggling with the language, they may not be able to gain a full understanding of what they are reading (Gunnarsson, 2001). It has been suggested that additional training be given to students conducting a significant part of their university education in a second language, and studies indicate that the vast majority students would be in favour of this (Tovazzi, 2011). Specific training in academic vocabulary has been shown to be helpful to

students who are suddenly faced with academic English at university (Coxhead & Byrd, 2007; Pétursdóttir, 2013).

Universities requiring students to study in a second language have a responsibility to ensure that they have the necessary language proficiency to succeed academically. In order for non-native English speakers to be admitted to English-speaking universities they have to pass tests of English proficiency. International students who intend to study in Norway must first prove their English proficiency, and some of these requirements are higher than for students studying in English-speaking universities. Despite the fact that all but one Norwegian student in this study had at least some university readings in English, and nearly half of the students were reading three-quarters of their material in English, there is no specific English exam Norwegian students need to pass to be admitted to university. There is an assumption that these students are capable of coping with large quantities of text written in academic English, simply by virtue of having been through the Norwegian education system. Admission to a university implies that students are considered to have the necessary qualifications, including language proficiency, to succeed academically, but if the admission criteria do not reflect the expectations of the university, students may not be prepared for the work they will face. The present study suggests that Norwegian students may not be sufficiently prepared for the English they encounter at university, and additional training in academic English may be a way to help improve educational outcomes.

7 References

Abu Dhabi Government. (2015). ADEC Schools Undergo Changes this New Academic Year. Retrieved 31/03/15, from https://www.abudhabi.ae/portal/public/en/abu_dhabi_emirate/government/news/news_detail?docName=ADEGP_DF_367968_EN&_adf.ctrl-state=ej63tzm3k_4&_afrLoop=14439199875867070

ACT. (2014). ACT Profile Report: Graduating Class 2014. Retrieved 31/03/15, from http://www.act.org/newsroom/data/2014/pdf/profile/National2014.pdf

Altbach, P. G. (2007). The Imperial Tongue: English as the Dominating Academic Language. *Economic and Political Weekly, 42*(36), 3608-3611.

Anderson, R. C., Wilson, P. T., & Fielding, L. G. (1988). Growth in Reading and How Children Spend Their Time Outside of School. *Reading Research Quarterly, 23*(3), 285-303. doi: 10.2307/748043

ANU. (2015). English in a Legal Context. Retrieved 1/4/15, from http://programsandcourses.anu.edu.au/2015/course/LAWS4209

Arnbjörnsdóttir, B. (2011). Exposure to English in Iceland - a quantitative and quantitative study.

Arnbjörnsdóttir, B., & Prinz, P. (2013). An English Academic Writing Course for Secondary Schools: a Pilot Study.

Baldvinsdóttir. (2011). English or Icelandic? A false dichotomy in a modern global society.

Berg, E. C., Hult, F. M., & King, K. A. (2001). Shaping the climate for language shift? English in Sweden's elite domains. *World Englishes, 20*(3), 305-319.

Bergman, M. W., Hudson, P. T., & Eling, P. A. (1988). How simple complex words can be: Morphological processing and word representations. *The Quarterly Journal of Experimental Psychology, 40*(1), 41-72.

Berman, R. (2011). Icelandic university students' English reading skills. *Málfríður, 26*(1), 15-18.

Bernhardt, E. (2005). Progress and Procrastination in second language reading research. *Annual Review of Applied Linguistics, 25*, 133-150.

Berns, M. (2009). English as lingua franca and English in Europe. *World Englishes, 28*(2), 192–199.

Berns, M., Claes, M.-T., de Bot, K., Evers, R., Hasebrink, U., Huibregtse, I., . . . van der Wijst, P. J. (1994). English in Europe. In M. Berns, K. de Bot, & U. Hasebrink (Eds.), *In the Presence of English: The Media and European Youth*. New York: Springer.

Bialystok, E., Luk, G., Peets, K. F., & Yang, S. (2010). Receptive vocabulary differences in monolingual and bilingual children. *Bilingualism: Language and Cognition, 13*(04), 525-531. doi: 10.1017/s1366728909990423

Björkman, B. (2011). English as a lingua franca in higher education: Implications for EAP. *Ibérica, 22*, 79–100.

Blystad, E. S., & Arnt, M. (2004). The Invisible Text: A report on subtitling for Norwegian television. Oslo: IMK services, Institute of Media and Communication, University of Oslo.

Bonnet, G. E. (2004). The assessment of pupil's skills in English in eight European countries. *The European Network of Policy Makers for The Evaluation Of Educational Systems*.

Bretag, T. (2007). The emperor's new clothes: Yes, there is a link between English language competence and academic standards. *People and Place, 15*(1), 13.

British Council. (2013). The English Effect: The impact of English, what it's worth to the UK and why it matters to the world. Retrieved 31/03/15, from http://www.britishcouncil.org/sites/britishcouncil.uk2/files/english-effect-report.pdf

British Council. (2015). Our Organisation. Retrieved 31/03/2015, from http://www.britishcouncil.org/organisation

Brock-Utne, B. (2001). The Growth of English for Academic Communication in the Nordic Countries. *International Review of Education / Internationale Zeitschrift für Erziehungswissenschaft / Revue Internationale de l'Education, 47*(3/4), 221-233. doi: 10.2307/3445342

Chen, Q., & Ge, G.-c. (2007). A corpus-based lexical study on frequency and distribution of Coxhead's AWL word families in medical research articles (RAs). *English for Specific Purposes, 26*(4), 502-514. doi: 10.1016/j.esp.2007.04.003

Cho, K.-S., & Krashen, S. D. (1994). Acquisition of vocabulary from the Sweet Valley Kids series: Adult ESL acquisition. *Journal of Reading*, 662-667.

Clyne, M. (1987). Cultural differences in the organization of academic texts: English and German. *Journal of Pragmatics, 11*(2), 211-241.

Coleman, J. A. (2006). English-medium teaching in European higher education. *Language Teaching, 39*(01), 1. doi: 10.1017/s026144480600320x

Coley, M. (1999). The English Language Entry Requirements of Australian Universities for Students of Non-English Speaking Background. *Higher Education Research & Development, 18*(1), 7-17. doi: 10.1080/0729436990180102

Corson, D. (1997). The learning and use of academic english words. *Language Learning, 47*(4), 671-718.

Coxhead, A. (1998). An academic word list. In V. U. o. Wellington (Ed.), *English Language Institute Occasional Publication No. 18*. Wellington, New Zealand.

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

Coxhead, A., & Byrd, P. (2007). Preparing writing teachers to teach the vocabulary and grammar of academic prose. *Journal of Second Language Writing, 16*(3), 129-147. doi: 10.1016/j.jslw.2007.07.002

Cummins, J. (1979). Linguistic interdependence and the educational development of bilingual children. *Review of educational research, 49*(2), 222-251.

Cummins, J. (1980). The cross-lingual dimensions of language proficiency: Implications for bilingual education and the optimal age issue. *TESOL Quarterly*, 175-187.

Cummins, J. (1984). Wanted: A theoretical framework for relating language proficiency to academic achievement among bilingual students. *Language proficiency and academic achievement, 10*, 2-19.

Cummins, J. (2008). BICS and CALP: Empirical and theoretical status of the distinction *Encyclopedia of language and education* (pp. 487-499): Springer.

d'Ydewalle, G., & Van de Poel, M. (1999). Incidental foreign-language acquisition by children watching subtitled television programs. *Journal of Psycholinguistic Research, 28*(3), 227-244.

Day, R. R., Omura, C., & Hiramatsu, M. (1992). Incidental EFL vocabulary learning and reading. *Reading in a Foreign Language, 7*, 541-541.

Díaz Cintas, J., & Fernández Cruz, M. (2008). Using subtitled video materials for foreign language instruction. In J. Díaz Cintas (Ed.), *The Didactics of Audiovisual Translation* (pp. 201-214). Amsterdam: John Benjamins.

Dijkstra, T., Grainger, J., & van Heuven, W. J. B. (1999). Recognition of Cognates and Interlingual Homographs: The Neglected Role of Phonology. *Journal of Memory and Language, 41*(4), 496-518. doi: http://dx.doi.org/10.1006/jmla.1999.2654

Dovring, K. (1997). *English as a Lingua Franca: Double Talk in Global Persuasion*. Conneticut: Praeger.

Durrant, P. (2009). Investigating the viability of a collocation list for students of English for academic purposes. *English for Specific Purposes, 28*(3), 157-169. doi: 10.1016/j.esp.2009.02.002

ETS. (2015). TOEFL. Retrieved 1/4/15, from http://www.ets.org/toefl

Feast, V. (2002). The impact of IELTS scores on performance at university. *International Education Journal, 3*(4), 70 - 85.

Fennell, B. A. (2001). *A History of English: A Sociolinguistic Approach*. Oxford: Blackwell.

Fraser, C. A. (2007). Reading rate in L1 Mandarin Chinese and L2 English across five reading tasks. *Modern Language Journal, 91*, 372-394.

Freeborn, D. (1998). *From Old English to Standard English: A Course Book in Language Variation Across Time*: University of Ottawa Press.

Graddol, D. (2000). The Future of English. Retrieved 31/03/15, from http://www.teachingenglish.org.uk/sites/teacheng/files/learning-elt-future.pdf

Graham, J. G. (1987). English language proficiency and prediction of academic success. *TESOL Quarterly, 21*(3), 505-521.

Gunnarsson, B.-L. (2001). Swedish, English, French or German - the Language Situation at Swedish Universities. In U. Ammon (Ed.), *The Dominance of English as a Language of Science: Effects on Other Languages and Language Communities* (pp. 287-316). Berlin: Mouton de Gruyter.

Hakuta, K., Butler, Y. G., & Witt, D. (2000). How long does it take English learners to attain proffiiciency? *University of California Linguistic Minority Research Institute Policy 2000-1*.

Hao, L., & Bonstead-Bruns, M. (1998). Parent-Child Differences in Educational Expectations and the Academic Achievement of Immigrant and Native Students. *Sociology of Education, 71*(3), 175-198. doi: 10.2307/2673201

Hatlevik, I., & Norgård, J. (2001). Myter og fakta om språk (No. 5). *Oslo, Norway: NIFU. Norsk institutt for studier av forskning og utdanning*.

Haywood, S. (n.d). Academic Vocabulary. from http://www.nottingham.ac.uk/alzsh3/acvocab/awlhighlighter.htm

Hellekjær, G. O. (2005). The Acid Test: Does upper secondary EFL instruction effectively prepare Norwegian students for the reading of English textbooks at colleges and universities. *PhD thesis*.

Hellekjær, G. O. (2009). Academic English reading proficiency at the university level: A Norwegian case study. *Reading in a Foreign Language, 21*(1), 198–222.

Hellekjær, G. O. (2012). A survey of English use and needs in Norwegian export firms. *Hermes – Journal of Language and Communication in Business, 48*, 7-18.

Henry, A. (2014). Swedish students' beliefs about learning English in and outside of school. In D. Lasagabaster, A. Doiz, & J.-M. Sierra (Eds.), *Motivation and Foreign Language Learning: From Theory to Practice* (pp. 93–116). Amsterdam: John Benjamins.

Hill, K., Storch, N., & Lynch, B. (1999). A comparison of IELTS and TOEFL as predictors of academic success. *IELTS research reports, 2*(52-63).

Hirsch, D., & Nation, P. (1992). What vocabulary size is needed to read unsimplified texts for pleasure. *Reading in a Foreign Language, 8*(2), 689-696.

Hoff, E., Core, C., Place, S., Rumiche, R., Senor, M., & Parra, M. (2012). Dual language exposure and early bilingual development. *J Child Lang, 39*(1), 1-27. doi: 10.1017/S0305000910000759

Hyland, K., & Tse, P. (2007). Is there an "academic vocabulary"? *TESOL Quarterly, 41*(2), 235-253.

IELTS. (2007). International English Language Testing System Handbook 2007.

IELTS. (n.d). IELTS - About Us. Retrieved 1/4/15, from http://www.ielts.org/

Ittzes, K. (1991). Lexical guessing in isolation and context. *Journal of Reading*, 360-366.

Jennings, S., & Robertson, M. (2015). What's the difference between IELTS and TOEFL? Retrieved 6/4/15, from http://www.scottsenglish.com/ielts/whats-the-difference-between-ielts-and-toefl.asp

Jensen, H. P., & Johannesson, H. (1995). Engineering courses taught in English: An experience from Denmark. *European Journal of Engineering Education, 20*(1), 19-23.

Kaplan, R. B. (2001). English - the Accidental Language of Science? In U. Ammon (Ed.), *The Dominance of English as a Language of Science: Effects on other Languages and Language Communities*. Berlin: Mouton de Gruyter.

Kerstjens, M., & Nery, C. (2000). Predictive validity in the IELTS test: A study of the relationship between IELTS scores and students' subsequent academic performance. *IELTS research reports, 3*, 85-108.

King, J. (2002). Using DVD feature films in the EFL classroom. *Computer Assisted Language Learning, 15*, 509-523.

Kirchik, O., Gingras, Y., & Larivière, V. (2012). Changes in publication languages and citation practices and their effect on the scientific impact of Russian science (1993–2010). *Journal of the American Society for Information Science and Technology, 63*(7), 1411-1419.

Krashen, S. (1982). *Principles and practice in second language acquisition*. Oxford: Pergamon.

Krashen, S. (1989). We Acquire Vocabulary and Spelling by Reading: Additional Evidence for the Input Hypothesis. *The Modern Language Journal, 73*(4), 440-464. doi: 10.2307/326879

Kroll, J. F., & Stewart, E. (1994). Category interference in translation and picture naming: Evidence for asymmetric connections between bilingual memory representations. *Journal of Memory and Language, 33*(2), 149-174.

Lai, C., & Gu, M. (2011). Self-regulated out-of-class language learning with technology. *Computer Assisted Language Learning, 24*(4), 317-335. doi: 10.1080/09588221.2011.568417

Laufer, B. (1992). Reading in a foreign language: how does L2 lexical knowledge interact with the reader's general academic ability. *Journal of Research in Reading, 15*(2), 95-103.

Laufer, B. (2000). *Task effect on instructed vocabulary learning: The hypothesis of involvment*. Paper presented at the Selected Papers from AILA '99 Tokyo, Tokyo.

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.

Lee, Y.-J., & Greene, J. (2007). The Predictive Validity of an ESL Placement Test A Mixed Methods Approach. *Journal of Mixed Methods Research, 1*(4), 366-389.

Legrand, E. (2012). Music Crossing Borders: Monitoring the cross-border circulation of European music repertoire within the European Union: European Music Office.

Levine, A., Ferenz, O., & Reves, T. (2000). EFL Academic Reading and Modern Technology: How Can We Turn Our Students into Independent Critical Readers? *Teaching English as a Second or Foreign Language - Electronic Journal, 4*(4).

Lindgren, E., & Muñoz, C. (2013). The influence of exposure, parents, and linguistic distance on young European learners' foreign language comprehension. *International Journal of Multilingualism, 10*(1), 105-129. doi: 10.1080/14790718.2012.679275

Ljosland, R. (2007). English in Norwegian academia - a step towards diglossia? *World Englishes, 26*(4), 395–410.

Long, M. H. (1981). Input, interaction and second-language acquisition. *Annals of the New York Academy of Sciences, 379*(1), 259-278.

Lysandrou, P., & Lysandrou, Y. (2003). Global English and proregression: understanding English language spread in the contemporary era. *Economy and Society, 32*(2), 207-233. doi: 10.1080/0308514032000073400

Mauranen, A., Hynninen, N., & Ranta, E. (2010). English as an academic lingua franca: The ELFA project. *English for Specific Purposes, 29*(3), 183-190. doi: 10.1016/j.esp.2009.10.001

MCG Media Consulting Group. (2009). Study on the use of subtitling: The potential of subtitling to encourage foreign language learning and improve the mastery of foreign languages: European Commission.

Nagy, W. E., Anderson, R. C., Schommer, M., Scott, J. A., & Stallman, A. C. (1989). Morphological Families in the Internal Lexicon. *Reading Research Quarterly, 24*(3), 262-282. doi: 10.2307/747770

Nagy, W. E., Herman, P. A., & Anderson, R. C. (1985). Learning words from context. *Reading Research Quarterly, 20*(2), 233-253.

Nakada, T., Fujii, Y., & Kwee, I. L. (2001). Brain strategies for reading in the second language are determined by the first language. *Neuroscience Research, 40*, 351-358.

Nergis, A. (2013). Exploring the factors that affect reading comprehension of EAP learners. *Journal of English for Academic Purposes, 12*(1), 1-9. doi: 10.1016/j.jeap.2012.09.001

Norås, S. B. (2007). *"Det høres så mye mer fancy ut å plotte inn litt engelsk..." Our Norwegian-English language - are we just borrowing words, or are we actually bilingual?* (MA thesis), NTNU Norwegian University of Science and Technology, Trondheim.

Norwegian Council for Higher Education. (2003). Standard regulations for the degree of Philosophiae Doctor (PhD) from http://www.uhr.no/download.php?objectId=2377

Norwegian Ministry of Education and Research. (2004). Country Report: Norway. Norway: Norwegian Ministry of Education and Research,.

NTNU. (2015). English language requirements. from http://www.ntnu.edu/studies/langcourses/languagerequirements

Nunan, D. (2003). The Impact of English as a Global Language on Educational Policies and Practices in the Asia-Pacific Region. *TESOL Quarterly, 37*(4), 589-613. doi: 10.2307/3588214

Olsen, S. (1999). Errors and compensatory strategies: a study of grammar and vocabulary in texts written by Norwegian learners of English. *System, 27*, 191-205.

Oxford Royale Academy. (2014). "Why Should I Learn English?" – 10 Compelling Reasons for EFL Learners. Retrieved 9/4/15, from https://www.oxford-royale.co.uk/articles/reasons-learn-english.html

Pearson, N. (2004). *The idiosyncrasies of out-of-class language learning: A study of mainland Chinese students studying English at tertiary level in New Zealand.* Paper presented at the Proceedings of the Independent Learning Conference.

Pecorari, D., Shaw, P., Malmström, H., & Irvine, A. (2011). English Textbooks in Parallel-Language Tertiary Education. *TESOL Quarterly, 45*(2), 313-333. doi: 10.5054/tq.2011.247709

Pétursdóttir, M. (2013). *Explicit teaching of academic vocabulary in EFL: Preparing Icelandic students for education at university level.* (MA Thesis).

Phillipson, R. (1992). *Linguistic Imperialism*. Oxford: Oxford University Press.

Phillipson, R. (2001). Global English and local language policies: What Denmark needs. *Language problems & language planning, 25*(1), 1-24.

Rankin, Y., Gold, R., & Gooch, B. (2006). *3D role-playing games as language learning tools.* Paper presented at the Proceedings of EuroGraphics.

Reinders, H., & Wattana, S. (2011). Learn English or Die: The effects of digital games on interaction and willingness to communicate in a foreign langauge. *Digital Culture & Education, 3*(1), 3-29.

Reinders, H., & Wattana, S. (2014). Affect and willingness to communicate in digital game-based learning. *ReCALL, 27*(01), 38-57. doi: 10.1017/s0958344014000226

Royer, J. M., & Carlo, M. S. (1991). Transfer of comprehension skills from native to second language. *Journal of Reading*, 450-455.

Saville, N., & Hawkey, R. (2004). The IELTS Impact Study: Investigating Washback on Teaching Materials. In L. Cheng & Y. Watanabe (Eds.), *Washback in Language Testing: Research contents and methods* (pp. 73-97). London: Lawrence Erlbaum Associates.

Schelletter, C. (2002). The effect of form similarity on bilingual children's lexical development. *Bilingualism: Language and Cognition, 5*(2), 93-107.

Schleppegrell, M., & Christian, D. (1986). *Academic Language Proficiency*. Paper presented at the Annual Meeting of the American Anthropological Association, Philladelphia.

Shaw, P., & McMillion, A. (2008). Proficiency effects and compensation in advanced second-language reading. *Nordic Journal of English Studies, 7*(3), 123-143.

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

Sherkina-Lieber, M. (2004). The cognate facilitation effect in bilingual speech processing. *Cahiers linguistiques d'Ottawa, 32*, 108-121.

Sorescu-Marinkovic, A. (2010). Serbian language acquisition in communist Romania. *Balcanica*(41), 7-31. doi: 10.2298/balc1041007s

Statistics Norway. (2015). Population and population changes, Q4 2014. Retrieved 29/04/15, from http://www.ssb.no/en/befolkning/statistikker/folkendrkv/kvartal

Stubbs, M. (1995). Collocations and semantic profiles: on the cause of the trouble with quantitative studies. *Functions of language, 2*(1), 23-55.

Sundqvist, P. (2009). Extramural English Matters. *Out-of-school English and its impact on Swedish ninth graders' oral proficiency and vocabulary (Doctoral dissertation). Karlstad University studies, 55*.

Swales, J. (1987). Utilizing the Literatures in Teaching the Research Paper. *TESOL Quarterly, 21*(1), 41-68. doi: 10.2307/3586354

Sylvén, L. K., & Sundqvist, P. (2012). Gaming as extramural English L2 learning and L2 proficiency among young learners. *ReCALL, 24*(03), 302-321. doi: 10.1017/s095834401200016x

Tainer, E. (1988). English language proficiency and the determination of earnings among foreign-born men. *The Journal of Human Resources, 23*(1), 108-122.

Tardy, C. (2004). The role of English in scientific communication: lingua franca or Tyrannosaurus rex? *Journal of English for Academic Purposes, 3*(3), 247-269.

Tovazzi, M. (2011). *English as a Language of Learning at the University of Iceland. A Survey of Students' Perceived Proficiency.* (BA Thesis), University of Iceland.

Tribble, C. (2009). Writing academic English--a survey review of current published resources. *ELT Journal, 63*(4), 400-417. doi: 10.1093/elt/ccp073

University of Oslo. (2015). English proficiency requirements for exchange students. Retrieved 9/4/15, from http://www.uio.no/english/studies/admission/exchange/english-requirements.html

Utdanningsdirektoratet. (2013). Curricula in English. Retrieved 31/03/15, from http://www.udir.no/Stottemeny/English/Curriculum-in-English/

Van der Slik, F. W. P. (2010). Acquisition of Dutch as a Second Language. *Studies in Second Language Acquisition, 32*(03), 401-432. doi: 10.1017/s0272263110000021

Van Leeuwen, T. N., Moed, H. F., Tijssen, R. J., Visser, M. S., & Van Raan, A. F. (2001). Language biases in the coverage of the Science Citation Index and its consequencesfor international comparisons of national research performance. *Scientometrics, 51*(1), 335-346.

van Weijen, D. (2012). The Language of (Future) Scientific Communication. *Research Trends, 31*.

Vang, P. (2013). Motivating English language study among Master's students: The case for summary writing. *Nordic Journal of English Studies, 13*(1), 163-186.

Vongpumivitch, V., Huang, J.-y., & Chang, Y.-C. (2009). Frequency analysis of the words in the Academic Word List (AWL) and non-AWL content words in applied linguistics research papers. *English for Specific Purposes, 28*(1), 33-41. doi: 10.1016/j.esp.2008.08.003

Ward, J. (2001). EST: evading scientific text. *English for Specific Purposes, 20*, 141-152.

Ward, J. (2009). A basic engineering English word list for less proficient foundation engineering undergraduates. *English for Specific Purposes, 28*(3), 170-182. doi: 10.1016/j.esp.2009.04.001

West, M. (1953). *A general service list of English words*. London: Longman, Green.

White, J. L., & Horst, M. (2012). Cognate awareness -raising in late childhood: teachable and useful. *Language Awareness, 21*(1-2), 181-196. doi: 10.1080/09658416.2011.639885

Winke, P., Gass, S., & Sydorenko, T. (2010). The effects of captioning videos used for foreign language listening activities. *Language Learning & Technology, 14*(1), 65-86.

Appendix – Survey Questions

Asterisks indicate required questions

Part 1 – The academic language text

Please read the following text and answer the 8 questions below as quickly and accurately as possible.

The course of language development in children from bilingual homes is not well described or understood. On the one hand, it is clear that children exposed to two languages can learn them. A large body of research has refuted the once-held view that dual language input confuses children. To the contrary, children exposed to two languages can distinguish those languages from infancy, and they can learn two phonological systems, two vocabularies and two grammars. However, it is not clear whether children exposed to two languages typically acquire them at the same rate as monolingual children learn one.

Evidence of what is normative would address the much-debated question of the degree to which language acquisition is paced by biology versus experience. On the logic that children exposed to two languages must hear less of each than children exposed to one, the apparent rapidity and ease with which children acquire two languages has been cited in recent publications as evidence for the innateness of language – particularly grammar – and the independence of language acquisition from effects of variation in input. The remarkable skill of children at acquiring multiple languages could, however, obscure the extent to which language acquisition results from a process of learning from information provided in language experience. If despite their prodigious abilities, children typically require more time to acquire two languages than one, this would suggest a more input-based account of language acquisition.

Evidence regarding the normative rate of bilingual development would also inform educators and policy makers who seek to serve the many children from bilingual homes entering the school system each year. Statistically, bilingualism is a risk factor for poor academic outcomes in the US. This is surprising in the context of other evidence that bilingualism is associated with cognitive advantages and that bilingual adolescents enjoy psychosocial and academic benefits as a result. It could be that the statistical risk associated with bilingualism actually reflects effects of other correlated variables; socioeconomic status is a likely contender. Or, it could be that children learning two languages have a constellation of skills at school entry that differs from the skills of monolingual children and that is not well met by the educational system. To begin to understand the sources of difficulty that place children from bilingual homes at risk and in order to design appropriate curricula for such children, it

is necessary to identify the effects of early dual language exposure – apart from the other factors that are typically confounded with bilingualism at the societal level.

The first studies of bilingual development were not designed to provide normative data but to ask theory-based questions about the human capacity to learn two languages. These studies reported that bilingual children are comparable to monolingual children in the age at which they achieve basic milestones of language development, including production of first word, production of first two-word combination, achievement of a 50-word vocabulary, and in grammatical properties of their utterances, including use of finite verb forms, negation and pronominal subjects. Even the vocabulary development in each language of bilingual children has been reported to be within the normal range of variation for monolingual children. While such findings make it clear that bilingualism is well within the capacity of the human language faculty, they have been cited in support of stronger claims – for example, in the scientific literature, that ‘‘the speed of acquisition is comparable in monolinguals and bilinguals’’ and, in expert advice to parents, pediatricians and educators, that ‘‘no empirical evidence links bilingualism to language delay of any sort ’’.

1) Evidence for the ‘innateness’ of language comes from the fact that…*
( ) Children acquire language despite variations in input
( ) Children take longer to acquire two languages than one
( ) Dual language input confuses children
( ) Children sometimes switch language in the middle of a sentence

2) Which of the following factors does the text propose as the explanation for the statistical relationship between bilingualism and academic outcomes?*
( ) Cognitive advantages
( ) Cognitive disadvantages
( ) Socioeconomic status
( ) Psychosocial benefits

3) The main argument of the text is that*
( ) Bilingual children are disadvantaged compared to monolingual children
( ) Bilingualism is clear proof that language is innate
( ) There is no definitive evidence that bilingualism delays language acquisition in children
( ) Bilingualism causes poor academic outcomes

4) It is important for educators and policy makers to know about language acquisition in bilingual children because*
( ) Bilingualism is associated with cognitive advantages
( ) They need to communicate with the children in both languages equally to ensure successful language development
( ) Bilingualism causes poorer academic outcomes so bilingual children need more help

( ) They need to understand the factors associated with bilingualism which may affect how well the children perform in schools.

For the following questions, select the answer that best describes the underlined word in the context of the sentence (as it appears in the above text)

5) "It is not clear whether children exposed to two languages typically acquire them at the same rate as monolingual children learn one."*
( ) Learn
( ) Purchase
( ) Parse
( ) Collect

6) "...basic milestones of language development, including production of first word"*
( ) Management
( ) Assembly line
( ) Speaking
( ) Play

7) "Evidence of what is normative would address the much-debated question of the degree to which language acquisition is paced by biology versus experience"*
( ) A unit of temperature
( ) An academic award granted upon completion of studies
( ) Extent
( ) Measurement

8) "If despite their prodigious abilities, children typically require more time to acquire two languages than one, this would suggest a more input-based account of language acquisition"
( ) Bill
( ) Explanation
( ) Juxtaposition
( ) Financial record

Part 2 – The general language text

Please read the following text and answer the 8 questions below as quickly and accurately as possible.

Prosthetic body parts are nothing new. There are accounts of a 3,000 year old Egyptian mummy with a wooden big toe grafted to her right foot. It had been expertly carved, and painted to match her skin tone. Making limbs that look natural, though, is one thing. Making them feel real is much harder, because a real limb is always talking to the brain that controls it. That lack of feedback, and the discomfort it causes, is one reason why between a quarter and a half of people fitted with an artificial limb end up abandoning it.

Dr Daniel Tan and his colleagues in Cleveland, Ohio, created signals that appeared to come from the prosthetic arms of two volunteers by implanting electrodes around nerves in the amputees' stumps. When they connected these electrodes to a machine that generated electrical signals, both volunteers reported sensations which seemed, to them, to be coming from their hands.

The nature of the sensations depended on what sort of current Dr Tan applied. The simplest stimulation—a repetitive square-wave—produced an unnatural, vaguely electrical feeling. Using more elaborate patterns, though, the team could recreate everything from simple sensations such as pressure, vibration and tapping to more complicated feelings, as of a pen brushing lightly against the skin or of the hand rubbing across a texture.

Restoring sensation has practical uses. Modern prostheses are able, by reading electrical signals from muscles using electrodes attached to the skin of the missing limb's stump, to perform tasks such as picking things up. Delicate tasks, however, can be tricky, since the user must depend on a combination of sight and experience to work out how much pressure to apply. For example, when Dr Tan blindfolded his volunteers and asked them to pluck the stalks from cherries without crushing the fruit, they succeeded only 43% of the time. But when he connected pressure sensors attached to the prostheses' fingers to the signal-generating machine, and gave them appropriate feedback, the success rate jumped to 92%.

Intriguingly, one unexpected benefit was that the device's feedback banished the phenomenon of phantom limbs, in which an amputee feels that his missing appendage is still present. Without the computer-generated sensations, both volunteers reported that their prosthetic hands felt like external tools (one described it as like an artificial hand that he was holding with his phantom hand). Switching the sensations on made the hand feel like an integral part of the body.

The main drawback of this approach is that the wires to the implanted electrodes must penetrate a patient's skin. Besides being ugly and clumsy, that opens a route to infection. Dr Ortiz-Catalan and his colleagues in Sweden hope to rectify this by combining implanted electrodes with a state-of-the-art prosthetic-limb-mounting system in which an implant is fixed directly to the patient's bones, making an attachment point for the artificial limb, which

then connects to it via a set of implanted electrodes. This allows for greater accuracy and performance with moving the limb as there is less electrical noise from surrounding muscles. By running a current into the electrodes instead of just reading from them Dr Ortiz-Catalan has been able to induce sensations that appear to be coming from the artificial hand.

Combining these two approaches, then, should produce a big advance in the efficacy of artificial limbs, both in terms of practicality and also subjective experience. Part of the problem of phantom limbs is that they often hurt. By abolishing the phantoms, Dr Tan's technique also abolishes the pain. Asked about the comparison between a limb with feedback and one without, the participants were unequivocal. As one put it, "I'd rather have it in a heartbeat."

9) In Dr Tan's experiment, what made the feeling of having phantom limbs go away?*
( ) Picking stalks off cherries
( ) Combining sight and experience while picking up objects
( ) Connecting the prosthetic limb to electrodes implanted around nerves in the amputees' stumps
( ) Stimulating a realistic-looking prosthetic limb with repetitive square-waves

10) With an ordinary prosthetic limb, what must amputees rely on when performing delicate tasks?*
( ) The sound of the electronics
( ) Knowing what they've done before and watching what is happening
( ) Appropriate feedback from the sensors in the prosthesis
( ) Selecting the correct settings on the robotic prosthesis

11) Using elaborate patterns of stimulation in the prosthetic limb, Dr Tan was able to generate…*
( ) Pain from phantom limbs
( ) An unnatural, vaguely electrical feeling
( ) A range of sensations including pressure and vibrations
( ) The sensation of the limb being an external tool

12) Which of these problems are ***not*** mentioned in the text as being solved by the researchers?*
( ) Increasing the success rate of performing delicate tasks such as picking stalks from cherries without crushing them
( ) Risk of infection from electrodes penetrating the skin
( ) The feeling of the prosthesis being not part of the patient's body
( ) Faulty electrodes in the implant giving misleading signals to the brain

For the following questions, select the answer that best describes the underlined word in the context of the sentence (as it appears in the above text)

13) "When they connected these electrodes to a machine that generated electrical signals, both volunteers reported sensations which seemed, to them, to be coming from their hands."*
( ) A mental feeling of excitement
( ) Perception or awareness of stimuli through the senses
( ) Excitement caused by a rumour or occurrence
( ) The cause of excitement in a community

14) "Part of the problem of phantom limbs is that they often hurt."*
( ) A ghost or spirit
( ) Something that's not really there
( ) Something that's there but not visible
( ) Visual hallucination

15) "...in which an amputee feels that his missing appendage is still present"*
( ) Limb
( ) Accessory
( ) Appendix
( ) Bandage

16) "The main drawback of this approach is that the wires to the implanted electrodes must penetrate a patient’s skin"*
( ) Come closer
( ) Hypothesis
( ) Technique
( ) Entrance

Part 3 – The self-report questionnaire

17) Are you a currently-enrolled university student?*

( ) Yes ( ) No

18) Is English your native language?*

( ) Yes ( ) No

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

19) What is your native language? (you can select more than one)*

[ ] Norwegian	[ ] Danish	[ ] Arabic
[ ] Spanish	[ ] Swedish	[ ] Russian
[ ] German	[ ] Mandarin	[ ] other: _____
[ ] French	[ ] Hindi	[ ] other: _____

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

20) Do you speak any other languages? Please select all that apply

[ ] English	[ ] Swedish	[ ] other: _____
[ ] Spanish	[ ] Mandarin	[ ] other: _____
[ ] German	[ ] Hindi	[ ] other: _____
[ ] French	[ ] Arabic	
[ ] Danish	[ ] Russian	

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("Yes")

21) Do you speak any other languages? Please select all that apply

[ ] Spanish	[ ] Hindi	[ ] other: _____
[ ] German	[ ] Arabic	[ ] other: _____
[ ] French	[ ] Russian	
[ ] Mandarin	[ ] other: _____	

22) Gender*

( ) Female ( ) Male

23) Age*

( ) under 18	( ) 23-24	( ) 29-30
( ) 18-20	( ) 25-26	( ) over 30
( ) 21-22	( ) 27-28	

24) Where are you studying?*

( ) Norway ( ) Australia

25) How long have you lived in the country where you are currently studying?*

( ) less than 1 year ( ) 4 - 10 years ( ) always
( ) 1 - 3 years ( ) 10 - 20 years

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

26) How much time have you spent abroad where English was your main language for communication?*

( ) no time ( ) 1 - 6 months ( ) 1 - 2 years
( ) up to 4 weeks ( ) 6 - 12 months ( ) more than 2 years

Logic: Hidden unless: Question "How much time have you spent abroad where English was your main language for communication?" #26 is one of the following answers ("1 - 6 months","6 - 12 months","1 - 2 years","more than 2 years")

27) Please list all countries where you have stayed for 4 weeks or more and used English as your main language of communication (if relevant)

_____

28) Do you have any diagnosis that would affect your reading?

[ ] I have trouble with my eyesight
[ ] I have trouble with my eyesight, but wear glasses/contacts to correct my vision
[ ] I have dyslexia
[ ] I have problems with attention or understanding (eg ADHD, Asperger's)
[ ] I have difficulties with reading which I'd prefer not to specify
[ ] other: _____

29) Which of the following best describes your field of study?*

( ) Architecture / Fine Art / Music
( ) Science (including Mathematics, IT, Physics, Biology, Engineering, Chemistry)
( ) Humanities (including Social Sciences, Languages, Psychology)
( ) Law / Business / Economics
( ) Medicine
( ) Nursing and Health
( ) Education
( ) other: _____

Logic: Hidden unless: Question "Which of the following best describes your field of study?" #29 is one of the following answers ("Architecture / Fine Art / Music")

30) What do you study within that field?

( ) Architecture ( ) Music
( ) Fine art ( ) other: _____

Logic: Hidden unless: Question "Which of the following best describes your field of study?" #29 is one of the following answers ("Science (including Mathematics, IT, Physics, Biology, Engineering, Chemistry)")

31) What do you study within that field?

( ) Mathematics / Statistics
( ) Information technology
( ) Physics
( ) Chemistry
( ) Biology / Biomedical Sciences
( ) Astronomy / Astrophysics
( ) Earth Sciences
( ) Engineering
( ) Environmental Science
( ) Forensic Science
( ) other: _____

Logic: Hidden unless: Question "Which of the following best describes your field of study?" #29 is one of the following answers ("Humanities (including Social Sciences, Languages, Psychology)")

32) What do you study within that field?

( ) Anthropology / Archaeology
( ) Foreign languages
( ) Linguistics
( ) Literature / Poetry
( ) Drama
( ) Psychology
( ) History
( ) Classics
( ) Geography
( ) other: _____

Logic: Hidden unless: Question "Which of the following best describes your field of study?" #29 is one of the following answers ("Law / Business / Economics")

33) What do you study within that field?

( ) Law
( ) Business
( ) Commerce
( ) Accounting / Finance
( ) Economics
( ) Policy
( ) Government
( ) Management
( ) other: _____

Logic: Hidden unless: Question "Which of the following best describes your field of study?" #29 is one of the following answers ("Nursing and Health")

34) What do you study within that field?

( ) Nursing
( ) Sports and Exercise Science
( ) Nutrition / Dietetics
( ) Midwifery
( ) Occupational Therapy
( ) Pysiotherapy
( ) Pharmacy
( ) Public Health
( ) other: _____

Logic: Hidden unless: Question "Where are you studying?" #24 is one of the following answers ("Norway")

35) How many courses (7.5 credits) have you **completed** at university?*

( ) None (this is my first semester)
( ) 1 - 4 courses (7.5 – 30 credits)

( ) 5 - 8 courses (37.5 – 60 credits)
( ) 9 - 16 courses (67.5 – 120 credits) (one - two years of full-time study equivalent)
( ) 17 -24 courses (two - three years of full-time study equivalent)
( ) 25 - 32 courses (three - four years of full-time study equivalent)
( ) more than 32 courses (four years of full-time study equivalent)

Logic: Hidden unless: Question "Where are you studying?" #24 is one of the following answers ("Australia")

36) How many subjects have you **completed** at university?*
( ) None (this is my first semester)
( ) 1 - 4 subjects (up to a semester of full-time study equivalent)
( ) 5 - 8 subjects (up to one years of full-time study equivalent)
( ) 9 - 16 subjects (one - two years of full-time study equivalent)
( ) 16 - 24 subjects (two - three years of full-time study equivalent)
( ) 25 - 32 subjects (three - four years of full-time study equivalent)
( ) more than 32 subjects (four years of full-time study equivalent)

Logic: Hidden unless: Question "Where are you studying?" #24 is one of the following answers ("Norway")

37) Have you ever studied English as a subject at university?*
( ) yes ( ) no

Logic: Hidden unless: Question "Have you ever studied English as a subject at university?" #37 is one of the following answers ("yes")

38) How many courses of English have you taken at university?
( ) 7.5 ( ) 22.5 ( ) more than 30
( ) 15 ( ) 30

39) What is your father's highest level of education?*
( ) high school (up to year 10) ( ) Master's degree
( ) high school (up to year 12/13) ( ) Doctoral degree (PhD)
( ) Bachelor's degree ( ) don't know

40) What is your mother's highest level of education?*
( ) high school (up to year 10) ( ) Master's degree
( ) high school (up to year 12/13) ( ) Doctoral degree (PhD)
( ) Bachelor's degree ( ) don't know

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

41) How many years have you been learning English at school?*
( ) Less than 8 years ( ) 10 - 11 years ( ) more than 13 years
( ) 8 - 9 years ( ) 12 - 13 years

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

42) How long is it since you were in an English class at school?*

( ) less than a year
( ) 1 - 2 years
( ) 3 - 4 years
( ) 5 years or more

Logic: Hidden unless: Question "Where are you studying?" #24 is one of the following answers ("Norway")

43) How many of your textbooks and required course readings are in English?*

( ) none
( ) 1 - 25%
( ) 25 - 50%
( ) 50 - 75%
( ) 75 - 100%

44) How many non-school books do you read in your spare time in an average year?*

( ) none
( ) 1 - 3
( ) 4 - 6
( ) 6 - 12
( ) more than 1

45) How many of the non-school books you read (in your spare time) are in English?*

( ) none
( ) 1 - 25%
( ) 25 - 50%
( ) 50 - 75%
( ) 75 - 100%

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

46) How much do you rely on subtitles when watching movies/TV shows in English?*

( ) Always
( ) Often
( ) Sometimes
( ) Never

Logic: Hidden unless: Question "How much do you rely on subtitles when watching movies/TV shows in English?" #46 is one of the following answers ("Always","Often","Sometimes")

47) If you had the choice, which language would you prefer the subtitles to be in?

( ) English
( ) Norwegian

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

48) How often would you write in English in an average day?*

( ) Always
( ) Often
( ) Sometimes
( ) Never

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

49) When do you use English to communicate with others? (tick all that apply)*

[ ] communicating with friends/partner from abroad
[ ] writing for an international audience (eg online)
[ ] communicating with English-speaking university staff

[ ] writing school assignments/exams
[ ] other: _____
[ ] other: _____

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

50) How important do you think it is for you to know English for your future career?*

( ) Not important
( ) Quite important
( ) Somewhat important
( ) Very important

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

51) How important do you think it is for you to know English for entertainment or social reasons?*

( ) Not important
( ) Quite important
( ) Somewhat important
( ) Very important

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

52) How comfortable do you feel reading in English?*

( ) I struggle with understanding things written in English
( ) I can understand if I really concentrate
( ) I can understand most things in English
( ) I feel totally comfortable reading in English

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

53) How comfortable do you feel writing in English?*

( ) I struggle with writing in English
( ) I can usually express myself in English
( ) I'm pretty comfortable writing in English
( ) I feel totally comfortable writing in English

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

54) Do you feel like the English you learned in school prepared you for the English you encounter at university?*

( ) Definitely
( ) Not really
( ) Mostly
( ) Definitely not

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

55) Do you find it difficult to read academic texts in English?*

( ) Definitely ( ) Not really
( ) Sometimes ( ) Definitely not

Logic: Hidden unless: Question "What is your native language? (you can select more than one)" #19 is one of the following answers ("Norwegian")

56) Do you find it difficult to read academic texts in Norwegian?*

( ) Definitely ( ) Not really
( ) Sometimes ( ) Definitely not

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("Yes")

57) Do you find it difficult to read academic texts?*

( ) Definitely ( ) Not really
( ) Sometimes ( ) Definitely not

Logic: Hidden unless: Question "What is your native language? (you can select more than one)" #19 is one of the following answers ("Norwegian")

58) Do you think you would read more of the required course readings if they were in Norwegian?*

( ) Definitely ( ) No difference ( ) Definitely not
( ) Sometimes ( ) Not really

59) Do you think you would read more of the required course readings if they were in written in a more conversational style?*

( ) Definitely ( ) No difference ( ) Definitely not
( ) Sometimes ( ) Not really

Logic: Hidden unless: Question "What is your native language? (you can select more than one)" #19 is one of the following answers ("Norwegian")

60) Do you find that it takes longer to read in English than Norwegian?*

( ) Definitely ( ) No difference ( ) Definitely not
( ) Sometimes ( ) Not really

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

61) Which of these activities do you find easiest **in English**? Please rank the following in order of difficulty (one for each column)*

	Easiest	**Easy**	**More difficult**	**Most difficult**
Reading	( )	( )	( )	( )
Writing	( )	( )	( )	( )
Speaking	( )	( )	( )	( )
Listening	( )	( )	( )	( )

Logic: Hidden unless: Question "What is your native language? (you can select more than one)" #19 is one of the following answers ("Norwegian")

62) Which of these activities do you find easiest **in Norwegian**? Please rank the following in order of difficulty (one for each column)*

	Easiest	**Easy**	**More difficult**	**Most difficult**
Reading	( )	( )	( )	( )
Writing	( )	( )	( )	( )
Speaking	( )	( )	( )	( )
Listening	( )	( )	( )	( )

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

63) Compared to other sources, how important have **English lessons at school** been to your knowledge of English?*

( ) Very important ( ) Not very important ( ) Not relevant
( ) Quite important ( ) Not important at all

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

64) Compared to other sources, how important have **books you read in your spare time** been to your knowledge of English?*

( ) Very important ( ) Not very important ( ) Not relevant
( ) Quite important ( ) Not important at all

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

65) Compared to other sources, how important have **English-language movies / TV shows** been to your knowledge of English?*

( ) Very important ( ) Not very important ( ) Not relevant
( ) Quite important ( ) Not important at all

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

66) Compared to other sources, how important has **communicating with friends in English** been to your knowledge of English?*

( ) Very important ( ) Not very important ( ) Not relevant
( ) Quite important ( ) Not important at all

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

67) Compared to other sources, how important has **reading articles online in your spare time** been to your knowledge of English?*

( ) Very important ( ) Not very important ( ) Not relevant
( ) Quite important ( ) Not important at all

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

68) Compared to other sources, how important has **reading articles and textbooks for school** been to your knowledge of English?*

( ) Very important ( ) Not very important ( ) Not relevant
( ) Quite important ( ) Not important at all

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

69) Compared to other sources, how important has **communicating with people online (eg gaming)** been to your knowledge of English?*

( ) Very important ( ) Not very important ( ) Not relevant
( ) Quite important ( ) Not important at all

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

70) Have there been other important sources of information about the English language for you? If so, please describe below

_____

71) Please rank the following in the order you find easiest to read*

	Easiest	**Quite easy**	**Moderately easy**	**Quite hard**	**Hardest**
Novels	( )	( )	( )	( )	( )
Academic journal articles	( )	( )	( )	( )	( )
Textbooks	( )	( )	( )	( )	( )
Newspaper articles	( )	( )	( )	( )	( )
Magazine articles	( )	( )	( )	( )	( )

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

72) Is there a particular book / TV show / movie / game that you remember learning English from? If so, please name it below.

_____

Logic: Hidden unless: Question "Is English your native language?" #18 is one of the following answers ("No")

73) If a friend wanted to learn more English, what would you suggest they try?

_____

74) Did you look up the meanings of any words when you were reading the texts in this survey? (please be honest!)*

( ) yes ( ) no

Logic: Hidden unless: Question "Did you look up the meanings of any words when you were reading the texts in this survey? (please be honest!)" #74 is one of the following answers ("yes")

75) How many words did you look up?

( ) 1 or 2 ( ) 6 - 10

( ) 3 - 5 ( ) more than 10

76) How difficult was it to read the text about **Bilingualism**?*

( ) Very difficult ( ) Okay ( ) Very easy

( ) Quite difficult ( ) Quite easy

77) How difficult was it to read the text about **Prosthetic Limbs**?*
( ) Very difficult
( ) Quite difficult
( ) Okay
( ) Quite easy
( ) Very easy

78) For which of the texts did you feel more confident that your answers to the questions are correct?*
( ) Bilingualism
( ) Prosthetic limbs
( ) I feel equally confident about my answers to both texts