At the Core of Comprehension:
An Exploration of Complex Sentence Structures and the Relationship between Syntactic Awareness and Reading Comprehension

M.A. in English Teaching

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Preface

This thesis is submitted to the Faculty of Languages and Cultures School of Humanities of the University of Iceland in partial fulfillment of the requirements for the degree of MA in English Teaching.

It is a 30-credit thesis and is written under the supervision of Ásrún Jóhannsdóttir, adjunct, Faculty of Languages and Cultures School of Humanities, University of Iceland.
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Abstract

Navigating through a challenging informational text and maintaining understanding, while reading, can be a difficult task for many in their L2. The nature of complex syntactic devices used to construct informational texts written in English complicates the reading process. They involve nominalization, formulaic language, multi-phrasal coordination, and long, high-density sentences. However, having the ability to read such texts in today’s globalized world promotes not only learners’ future prospects in developing personally and professionally but also their potential in seeking answers and acquiring knowledge independently. As sentence complexity contributes to comprehension problems, the role of syntactic awareness contribution to reading comprehension needs to be addressed. Determining Icelandic learners’ knowledge of complex syntactic structures by way of measuring their proficiency level of informational texts may assist in identifying gaps and instructional methods to increase learners’ awareness of syntactic clues. The following study examines sixty-six upper secondary school learners’ vocabulary depth, syntactic awareness, and reading comprehension of informational texts as well as the relationship between variables. Three types of instruments are used to measure the participants’ proficiency: Paribakht and Wesche’s (1993) Vocabulary Knowledge Scale (VKS) to measure vocabulary depth, an Accuplacer Placement Test from the College Board (2016) and Academic English Online from Queen Mary University of London’s website (2010) to measure syntactic awareness, and two informational texts; one Compass Test and one SAT Reading Test to evaluate reading comprehension. Aside from vocabulary depth’s significant contribution to the participants’ comprehension, the results revealed a highly significant relationship between syntactic awareness and reading comprehension. The wide range of findings indicates learners’ individualized proficiency affecting their ability to comprehend. Based on the results, syntactic awareness promotes fluent bottom-up processing of complex rhetorical devices characterizing informational texts.

Key words: syntactic awareness, vocabulary depth, reading comprehension
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1 Introduction

An important aspect of teacher development is providing learners with guidance and necessary tools in becoming accomplished language learners. Understanding common shortcomings allow teachers to increase learners´ reading proficiency through correct instruction. This entails identifying common weaknesses and taking advantage of them by producing effective instructional material. As the fundamental characteristics of informational texts can lead to comprehension failure and few have addressed common structural and syntactic features affecting understanding, it is necessary to draw together previously identified issues and recent developments regarding the complex structural characteristics of perplexing sentences to evaluate the effect they have on learners´ reading comprehension. That being said, this study focuses mainly on how complex sentence structures found in informational texts affect upper-secondary school learners´ reading comprehension. Hopefully, the study will give some information whether further research on the effects of sentence structures is needed and if classroom material should be reevaluated in terms of grammatical and syntactic instruction.

1.1 Background Information and Rationale

Good reading skills and comprehension in English are necessities in today´s globalized environment. However, reading is a complex process and complicated further by the specificities and complex sentence structures of informational texts vastly affecting their readability, especially when reading in a second language as it often presents additional challenges for L2 learners to overcome. As learners progress, they are exposed more frequently to academically written texts, informational texts, for the purpose of preparing them for future studies at higher academic levels. However, the informational characteristics of academic language differ considerably from informal narrative conventions (Hyland, 2003). New text-level features may cause problems as word order, longer sentences, density, subordination, and conjunctions influence the reading process and overall comprehension of what is being conveyed (Scott & Balthazar, 2010). For this reason, it is important to identify syntactic difficulties as a specific language weakness and introduce alternative teaching methods in order to strengthen learners´ literacy in reading complicated texts.
As a potential educator, a zealous reader myself and mother of three children at various educational stages, I have either been asked about or experienced the issues described above. After observing learners in the classroom and listening attentively to their comments, a fundamental question always comes to mind: What particularly makes formal texts complicated and difficult to read? It was not until my oldest daughter, a student in biomedical science, needed assistance in understanding an article for an assignment. “Such transfer...! What does he mean, why does the researcher have to write his article in such a difficult manner?” This observant question triggered a desire to search for an answer.

A result of my reflections and inquiries has motivated an interest in determining what type of sentence structures and linguistic elements are most problematic for Icelandic learners when reading formal texts in English. Of course, this question has been brought up by various researchers with numerous studies which demonstrate how essential factors such as challenging vocabulary, text coverage, and linguistic knowledge affect learners’ reading comprehension. However, language is socially constructed, and writing conventions differ between groups and discourses. For the purpose of increasing disciplinary literacy, complex sentence structures (complex syntax) and grammatical features cannot be dismissed in identifying problematic language facets which can influence informational reading and achievement in skilled and less skilled readers.

1.2 Focus of the Study

“To claim...that syntactic processing is not necessary (for reading) is frankly unbelievable.”

(Urquhart & Weir, 1998, p. 60)

Without words, and the linguistic elements merging them together into chunks of words, sentences would not exist and reading would not be up for discussion. As Wilkins (1972) states, “without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (p. 111). In the last few decades, language has been examined in more integrative and holistic terms and not viewed as a result of “a number of individual language ‘knowledge bits’ which reside completely within ‘interlocutors’” (Schmitt & Celce-Murcia, 2010, p. 11). Given that, attitudes towards
conceptualizing vocabulary and grammar as two different entities have changed and today are seen as two fundamental factors of language and termed lexio-grammar (Halliday, 1978). By way of example, the word hand can be used in multiple ways, as a noun or a verb. However, by choosing the collocation lend a hand, users are constrained to use it within a particular structure, He lends a hand. Oxford (1990) asserts that teaching learners effective strategies facilitates language learning. In light of this, it is important to seek further information on how vocabulary and linguistic elements affect reading comprehension.

Today’s main instructional method is based on communicative methods which do not emphasize grammar. Milton (2009) points out that research on the effects of grammar is mostly carried out by grammatical researchers who are more interested in grammar than vocabulary learning, while vocabulary researchers focus their attention specifically on vocabulary. Generally, or as Grabe (2009) mentions, the role of grammar is not a common topic in books which deal with aspects of reading. A possible consequence of its insignificance may be demonstrated in the fact that teachers and researchers rarely discuss the need to connect grammar instruction with increasing comprehension. Mainly because there is little acknowledgment of how grammar per se strengthens comprehension (Fender, 2001; Grabe 2005, 2009). Yet multiple structural characteristics of complex sentences are known to cause difficulty in understanding. A striking feature of complex sentences is their distinctiveness in containing an independent clause and at least one dependent (subordinate) clause. While an independent clause has the ability to stand alone as a sentence, a subordinate clause cannot, e.g. adverbial, adjectival, and nominal. However, when long-distance dependencies are added by way of center-embedding a relative clause into a sentence (e.g. interrupting the main clause and verb) the complexity level is increased to the extent of misconception or comprehension failure. Other fundamental characteristics defining complex sentences and add to texts´ complexity are lexical density, formulaic sequences, normalization, passives, and phrasal coordination. More details on these aspects will be given in section 2.2. The apparent lack of acknowledgment of the above sentence-level syntactic difficulties causes concern and in fact calls into question the relevance and validity of giving syntactic awareness attention as learners´ reading comprehension at multiple educational stages is deteriorating despite interventions.
Complicated linguistic elements, such as the above sentence structures, have been a neglected issue, both Nagy (2007) and Nation (2005) discuss various plausible reasons why learners’ syntactic awareness should be increased. For example, fluent L2 readers are often unaware of their syntactic processing while less skilled L2 readers, who struggle, are more aware of their lack of grammatical knowledge at the clause level (Grabe, 2009). Although there is a considerable amount of literature on the multiple aspects of complex sentences and the linguistic elements which cause them to be complicated, unfortunately, there are limited studies on how these facets influence learners’ ability to process these types of sentences not to mention comprehend the overall meaning of which is being conveyed. For this reason, recent contributors, such as Scott (2009) and Scott & Balthazar (2010), have argued for the evaluation of sentence comprehension and its contribution to reading comprehension.

In light of the above literature, there is a gap in the research on the effects of syntactic awareness on comprehension. Therefore, it is vital to examine and analyze syntactic obstacles which affect Icelandic learners’ reading comprehension at the clausal and sentence level. On that account, this study focuses on upper secondary school learners’ depth of vocabulary, syntactic awareness (including grammatical awareness), and reading comprehension of informational texts and is a preliminary attempt to examine the relationship between the three variables. The main focus will be primarily on sentence structure and linguistic elements which increase the complexity of texts at the sentence level. Although vocabulary depth is taken into consideration when determining learners’ knowledge, it is only used as a marker to make a more informed evaluation of the relationship between the three aspects. By evaluating these three specific elements, I seek to identify learners’ vocabulary depth and syntactic awareness in order to determine whether syntactic awareness affects their reading comprehension as well as what specific linguistic entities are more perplexing than others.

1.3 Concepts

Before proceeding further, and to avoid confusion, it is necessary to discuss a few concepts used in the study. First, throughout this paper is the term syntax is used in accordance with its meaning found in the Merriam-Webster Dictionary, “the way in which linguistic elements (such as words and grammatical aspects) are put together to
form constituents (such as phrases or clauses)” in creating a meaningful sentence (Syntax, n.d.). This entails how words tend to establish relationships by generating phraseological units (formulaic sequences) and how there are connected together grammatically in forming meaningful sentences. Second, application of the term sentence embraces both form (words and syntax) and meaning conveyed by the string of words and clauses being strung together in forming a sentence. Third, the standard meaning of syntactic awareness encompasses an individual’s ability to consciously manipulate and assess word-order within the context of a sentence by the use of grammatical rules within the context of a sentence (Bowey & Patel, 1988; Cain, 2007) while syntactic knowledge is the unconscious understanding of rules governing a sentence’s word-order.

1.4 Word Knowledge and Reading Comprehension

Comprehension is not a unitary phenomenon but rather a family of skills and activities… At the core of comprehension is our ability to mentally interconnect different events in the text and form a coherent representation of what the text is about.

(Kendeou et al., 2007, p. 28-9)

Research has established that reading comprehension involves acquiring sufficient linguistic knowledge of morphological, grammatical and syntactical aspects of English to read multiple types of texts, actively and fluently. Simply put, this complex process is an integration of multi-dimensional components involving the reader’s previous knowledge and language proficiency.

Reading has been defined as two types of processes, top-down and bottom-up. Bottom-up, or the lower level processing, is a process where readers read letter from letter and focus mainly on the words form, vocabulary knowledge, syntax and grammatical functions. Readers who only apply lower level processing are considered less skilled readers. In understanding the reading process, it is essential to discuss a vital facet of lower-level processing, word recognition. The process involves recognizing an efficient amount of word forms, phonologically and orthographically, analyzing grammatical information through syntactic parsing and connecting them with their semantic meanings (Grabe, 2009). In L1 reading, word recognition is considered a
crucial component in learners´ reading comprehension abilities (Perfetti, 1985; Stanovich, 2000). Without a large recognition vocabulary, a reader is less likely to generate comprehension from a combination of graphic forms.

Reading in a second language is a multi-dynamic and interactive process. It involves having an ample amount of cognitive ability accessible for comprehension (Pressley, 2002). Readers who have accumulated top-down processing, or higher level processing, do not have to read each word and decipher meaning exclusively from word forms. Instead, they automatically recognize words and use background knowledge and schemata to decipher meanings from clues in the text. According to Bartlett´s (1932) schema theory, readers use previous knowledge, background knowledge, actively and constructively to interpret meanings. When analyzing, synthesizing, and forming an opinion, learners must use former background experiences to interpret meaning from texts. At the same time, their reaction to texts is shaped by personal, cultural and social variables. By acquiring lower- and higher-level processing, learners decode, build, and construct comprehensible meaning to form opinions from a variation of written informational texts.

1.5 Syntactic Awareness

As was reported above, Nagy (2007) argues that syntactic awareness could be a contributor to reading comprehension in many ways. The problem learners are often confronted with in becoming fluent readers is having the ability to determine between and reflect on the multiple types of syntactic sentence structures necessary for reading comprehension. Previous studies have provided correlational support for syntactic awareness contributing and relating to reading comprehension (Cutting & Scarborough, 2006; Demont & Gombert, 1996; Muter, Hulme, Snowling, & Stevenson, 2004; Shiatsu & Weir, 2007). In addition, Bentin, Deutsch, and Liberman (1990) found that skilled readers demonstrate higher levels of syntactic awareness than less skilled readers. While Muter et al. (2004) established that syntactic awareness correlated moderately with word-level reading and reading comprehension, both Gaux and Gombert (1999) and Guo, Roehrig, and Williams (2011) provide support for syntactic awareness significantly contributed to the variance in reading comprehension. According to Nation and Snowling (2000) syntactic knowledge and awareness of different grammatical
structures at the sentence level assist learners to comprehend the texts overall conveyance of meaning.

1.6 The Purpose of the Study and the Research Questions

As afore-mentioned, my main purpose in carrying out the following study is to seek information I consider necessary to understand learners’ difficulties in reading informational texts. Learning about complex sentence structures, affecting learners’ reading comprehension, strengthens teachers’ ability to identify language gaps and create appropriate teaching material. This paper proposes to outline and describe multiple structures which research has demonstrated to be problematic and later identify particular sentence comprehension difficulties. The aim is to shed new light on sentence structures disrupting learners’ reading and understanding of complex informational texts for the purpose of increasing their reading comprehension as well as investigating whether there is a relationship between syntactic awareness and reading comprehension.

The primary objectives of the study are to examine 1) Icelandic upper secondary school learners’ a) vocabulary depth, b) syntactic awareness, and c) reading comprehension and 2) the relationship between their depth of vocabulary, syntactic awareness, and reading comprehension. In obtaining data for the current study, 66 secondary learners were presented with three tests and a background questionnaire.

The learners are tested by using three types of tests; a vocabulary depth test, a syntactic awareness test, and a reading comprehension test. In the vocabulary depth test, Paribakht and Wesche’s Vocabulary Knowledge Scale (VKS), learners are asked to estimate how well they understand specific words randomly chosen from the syntactic and reading tests’ components. The syntactic awareness test consists of three test components taken from online Accuplacer Tests (The College Board, 2016) and 2 tests taken from Academic English Online (Tweedle, 2010). In an attempt to identify problematic issues regarding learners’ syntactic awareness of complex sentence structures, the results from the five syntactic awareness tests will be used as a basis for determining syntactic and linguistic elements affecting learners’ reading comprehension. These elements will be reported in Chapter 4 and discussed in Chapter 5. Components tested in the test are grammar proficiency, sentence skills, evaluation of relative pronouns/adverbs use, determining the correct relative pronoun and recognizing
defining and non-defining relative clauses. Finally, the reading comprehension tests consist of two authentic native speaking texts, one SAT Reading Test and one Compass Test.

As informational texts are most often written by English native speakers, I have chosen the above testing materials because they are categorized as authentic and standardized native written tests and texts in determining learners’ syntactic awareness of sentence structures and reading skills required in entry-level college and university courses. In teaching reading, a teacher’s goal is to enhance learners’ reading comprehension by increasing their linguistic, sociolinguistic, discourse and strategic competence (Hymes, 1972). In doing so, the language classroom utilizes authentic native written texts and material to expose learners to English in the real world in order to increase their language proficiency and reading comprehension. By applying authentic texts and tests, learners are confronted with vocabulary and syntactic constructions they would otherwise never encounter in ESL materials. For this reason, authentic texts and tests are more beneficial to this study than non-native material which would not demonstrate the learners’ genuine depth of vocabulary knowledge, syntactic awareness of complex structures, and reading comprehension of informational texts. However, two non-native test types were included at the beginning of the syntactic awareness test for the sake of providing reasonable and less complicated test types to avoid test taking anxiety and frustration.

This paper is divided into six chapters. The first chapter gives a brief overview of the focus, background, purpose, and aims of the study before moving on to chapter two. The second chapter examines the multidimensional facets of reading and discusses the importance of having sufficient reading comprehension in English to read for informational purposes. Thereafter, I argue the case for the sentence as an essential aspect in enhancing reading comprehension of informational texts for professional development. Problems regarding different types of sentence structure are outlined and discussed in this chapter. I end the chapter by delving shortly upon how learners experience English after graduation. Chapter three gives a methodological outline of the study while Chapter four presents the results procured from the study. The fifth chapter discusses the results and links them to previously mentioned theories and research in the literature review in Chapter 2. Finally, the thesis is concluded with a conclusion on the
importance of the findings obtained in the study for future research, syllabi, and educational materials. For reasons previously discussed, vocabulary depth is not addressed extensively, apart from using it as a marker in this paper.
2 Theoretical Framework

In the previous chapter, I unfolded the purpose of the study and the importance of learners gaining efficient knowledge of syntactic structures characterizing informational texts. I have provided both the focus and goal of the study and disclosed the basis of my interest in the matter. The theoretical framework begins with a brief description of the complex nature of reading and vital components of the reading process. Thereafter, I make a case for the sentence, its effect on reading comprehension, aspects characterizing informational texts, and the importance of investing instructional focus on syntactic structures and other complex linguistic elements. Lastly, I discuss the English environment learners experience after graduation and the value of acquiring knowledge of complex syntactic sentence structures.

2.1 The Process of Reading

According to Alderson (2000), reading is "an enjoyable, intense, private activity, from which much pleasure can be derived, and in which one can become totally absorbed (p. 28). However, the task of "reading can have three main purposes, for survival, for learning or for pleasure" (Berardo, 2006, p. 61). Whatever the reason one has for reading a text, reading per se is an indispensable element in daily life and learning. Yet, this complex process is often taken for granted. In fact, the reading construct is an "integration of many component skills' (Grabe, 2014, p. 6) and often referred to as a “psycholinguistic guessing game” (Goodman, 1967, p. 135-142). The act of reading involves having recognition of an abundant amount of words, adequate comprehension of multiple texts, and fluency in reading accurately and efficiently.

Regardless of the complexities involved in the act of reading, multiple variables also affect L2 learners’ reading ability. For example, learners’ age, resources, motivation, schooling and socio-economic level, and individual cognition influence acquisition of language proficiency and reading ability (Carrel & Grabe, 2010). Additionally, lexical, grammatical, and discourse knowledge also affect reading proficiency. For comprehension to take place L2 readers need to have 1) sufficient vocabulary of several thousand words to understand 98% of texts (Hu & Nation, 2000), 2) have basic knowledge of syntactic structures, and 3) a general understanding of how genres are structured (Carrel & Grabe, 2010). L2 readers do not have the same access to
L1 language resources and background knowledge as L1 readers. In addition, their reason for learning to read in L2 may differ based on educational, integrational, and informational purposes. While some may be seeking further studies, others may wish to integrate into new societies for professional reasons or seek further knowledge for future prospects on a personal or professional basis.

In short, reading is a combination of multiple components. In the next section, I examine further components necessary for basic linguistic processing and successful reading, as one of the study’s main focus is on reading comprehension. However, before considering these elements, it is essential to begin by reviewing the role of word knowledge in reading and its multiple classifications.

2.1.1 Word knowledge

Undeniably, vocabulary is a pivotal factor in acquiring a second language. As Schmitt (2010) explains “…the importance of vocabulary is highlighted by the oft-repeated observation that learners carry around dictionaries and not grammar books” (p. 4). Having vocabulary knowledge of lexical items form, meaning, and use is strongly related to L2 reading comprehension (Nation, 2001; Schmitt, 2010). The interaction between vocabulary knowledge and reading comprehension demonstrates a mutual and cyclic effect on each other. Through reading, readers notice unfamiliar words, infer meaning by using contextual cues and prior linguistic knowledge. This lexical process, called bootstrapping, activates syntactic, semantic and pragmatic knowledge within readers’ working memory and is used to construe textual and lexical interpretations (de Bot, Paribakht, & Wesche, 1997). In other words, L2 reading contributes to vocabulary knowledge which in turn enhances reading comprehension.

Nation (2001) classifies the components of word knowledge into three primary descriptors that include receptive and productive categorization: form, meaning, and use. Form contains the receptive and productive aspects of spoken form, written form, and word parts. Determining words’ semantic meaning and associations with other words are important components to acquire. In identifying meaning from texts, learners make distinctions between the concepts and the referents by categorizing the words in the text and cognitively building networks with associations (Pajoohesh, 2014, p. 76). Other underestimated components are the knowledge of grammatical
patterns, collocations and formulaic sequences in use. As learners encounter difficulty with everyday conventional language and collocations, teaching explicitly phrasal vocabulary or selected chunks may make them more memorable. Therefore, for successful comprehension to occur, two aspects of linguistic knowledge have attracted considerable attention, vocabulary and grammatical knowledge.

For one thing, words along with grammatical cues build coherence, assisting writers to form ideas and readers in building situational models to interpret information (Kintsch, 1998; Perfetti & Britt, 1995). As Larsen-Freeman and DeCarrico (2010) explain

Grammar…consists of rules of syntax, which specify how words and phrases combine to form sentences, and rules of morphology, which specify how word forms are constructed (love, loved) (p. 18).

For this reason, comprehension relies not only on learners’ morphological and semantic knowledge of particular words but also their grammatical knowledge in constructing textual coherence and creating meanings for the purpose of extraction and construction of a situational model for comprehension of texts.

It is important to realize that when performing various activities learners integrate multiple skills in acquiring and communicating information which complicates categorization of language and word knowledge further. Whether meanings and ideas are constructed or conveyed receptively and productively, they occur at the text or discourse level (Schmitt & Celce-Murcia, 2010). Receptive use of language, listening and reading, entails decoding and constructing meanings and ideas. However, in producing language, writers and speakers of a language encode and convey their meaning and ideas.

In acquiring adequate reading comprehension, learners need to acquire not only a sizable breadth of knowledge but also the multifaceted depth of vocabulary knowledge. As Anderson and Freebody (1981) explain breadth and depth:

The first [type of vocabulary knowledge] may be called ‘breadth’ of knowledge, by which we mean the number of words for which the person knows at least some of the significant aspects of meaning…. [There] is a second dimension of vocabulary knowledge, namely the quality or ‘depth’ of understanding. We shall
assume that, for most purposes, a person has a sufficiently deep understanding of a word if it conveys to him or her all of the distinctions that would be understood by an ordinary adult under normal circumstances (p. 92–93).

First, learners develop a breadth of words before gaining depth of knowledge as there is no parallel growth rate due to the independent growth of each other (Schmitt, 2014). The acquisition process is long and tedious for some in linking words and making connections. However, for receptive and productive purposes, learners need to acquire both dimensions of word knowledge to become proficient L2 users.

Lastly, reading has been defined as two types of processes, top-down and bottom-up. Bottom-up, or the lower level processing, is a process which includes word recognition, syntactic parsing, and encoding meaning from word meaning and grammatical information embedded in a sentence with semantic and syntactic processing (Grabe, 2009). To generate meaning from a sentence, readers apply their working memory. This involves utilizing cognitive processes and word knowledge resources in creating an interpretation of a text. On the other hand, readers who have accumulated top-down processing, or higher level processing, do not have to read each word and decipher meaning exclusively from word forms. By acquiring lower- and higher-level processing, learners can use this interactive model of reading to form meanings from written texts quickly and efficiently.

I have briefly given an overview of vital definitions of word knowledge and explained the two processing clusters of reading, lower-level and higher-level processing, which enable successful reading comprehension. Let us now examine deeper the upper and lower-level processing aspects of reading to gain further understanding of the importance of having syntactic awareness of a language to process, parse, interpret, and store newly acquired information during reading.

### 2.1.2 Word recognition: phonological and orthographic decoding

In understanding the reading process, it is essential to discuss a vital aspect of lower-level processing, word recognition. In L1 reading, word recognition is considered a crucial component in learners’ reading comprehension abilities (Perfetti, 1985; Stanovich, 2000) and “fundamentally dependent upon knowledge of letter-sound correspondence rules” (Gough & Tunmer, 1986, p. 7). Word recognition consists of
previously acquired words being phonologically and orthographically recognized while new words’ forms are decoded based on grapheme-phoneme mappings.

Ehri (1991) explains how readers use four different methods to read words from texts. The first three describe the processes used to read unknown words while the fourth explains the reading process of known words, by memory or sight. When learning new words, learners need to recognize words phonologically before gathering information about them. Therefore, the first step involves extracting phonological information from texts. During reading, graphemes are sounded out and combined into phonemes. In the same fashion, chunks of letters form syllabic units into recognizable lexical units. The second process is analogizing which assists readers in utilizing known words to read new words (Goswami, 1986),

*bottle/throttle, cat/hat, will/fill*

By producing a rhyming response to the pronunciation of the target word facilitates further development of learners’ decoding ability.

Thirdly, there is prediction (Goodman, 1970; Tunmer & Chapman, 1998). Prediction “involves using context and letter clues to guess unfamiliar words” (Ehri, 2005, p. 168). According to Adams (1990) and Nagy, Herman, and Anderson (1985) readers can identify words by using contextual clues found in the grammar and syntax of a sentence, and semantic clues, as well as by associating sounds with clusters of letters with word parts (prefixes, suffixes, inflectional endings), and by analogizing. Johnson and Baumann (1984) demonstrate three types of contextual clues:

1. Semantic clues: *My bird loves to_________.* Readers who are familiar with birds would predict *fly, sing,* and *chirp.*

2. Syntactic clues: The above sentence demonstrates a missing verb. Applying a noun (cage) or an adjective (gray) would result in a senseless sentence without meaning.


Nagy and Scott (2000) point out the importance of readers having the ability to utilize contextual and morphemic clues that constitute the primary information when encountering unfamiliar words. Readers who are capable of using morphological and contextual clues are estimated to understand an additional one to three words to every
known word (Nagy & Anderson, 1984). According to Nagy and Gentner (1990), three related issues influence readers’ ability to infer meanings of unfamiliar words. The first reason involves readers who have obtained high-level language proficiency in identifying syntactic clues connected to a word’s meaning more effectively than those who lack in proficiency. Another reason why some readers experience difficulty with inferring words involves having more productive skills than receptive knowledge of syntactic structures to guess meanings. Lastly, L2 learners’ cross-linguistic transfer of syntactic knowledge also manipulates their prediction of correct meanings from unknown words. To put it differently, having accumulated the skill of taking advantage of clues, predicting, and analogizing increases readers potential of becoming independent and successful readers.

Finally, the fourth process involves increasing reading fluency by recognizing words automatically by sight. With time and frequent exposure, readers increase their vocabulary and build up automatic sight vocabulary (Ehri, 2005). Research has shown that well-skilled readers do not lack automaticity in word recognition (Perfetti, 1985; Segalowitz, Segalowitz, & Wood, 1998). Having the ability to read lexical units automatically and accurately, in isolation and in context, is the sign of a skilled reader (Stanovich, 1980). This entails identifying words’ pronunciation and meaning with a quick glance while simultaneously constructing the contextual meaning. Palmer (1917) pointed out the frequency hypothesis as being the relationship between frequency and learning; it demonstrated "...the more frequently used words will be the more easily learned" (p. 123). Zipf’s (1949) law demonstrates the human tendency to strive for immense achievements with the least amount of effort. The more often humans frequently perform useful behaviors; the easier the behaviors become. A learner’s acquisition of language is similar. Instead of learning long, complex words that are more inclined to be less frequent and useful, learners acquire first high-frequency words that are primarily shorter, single-syllable words (Nation, 2001, p. 34). Nevertheless, or according to Ehri (2005), words need not be high-frequency words as “a word read sufficiently often becomes a sight word that is read from memory” (p. 169). That being said, acquisition of the most frequent and useful words and exposure to words enables learners to decode and identify words by memory quickly without disrupting their train of thought.
Word recognition is a crucial component in learners´ reading comprehension abilities (Perfetti, 1985; Stanovich, 2000). Acquiring the skill of decoding, analogizing, or predicting clues from texts of reading unfamiliar words is a multidimensional aspect of reading. Readers without a large recognition vocabulary are less likely to generate comprehension from a combination of graphic forms. However, in language production, a speaker begins by specifically choosing words to convey meaning. They are assigned to their syntactic roles and assembled into sentence structures. Furthermore, research has shown that semantic and syntactic processing contributes to the comprehension process (Coltheart, Rastle, Perry, Langdon, & Ziegler 2001).

2.1.3 Syntactic priming and processing

In identifying meaning from texts, learners make distinctions between the concepts and the referents by categorizing words and cognitively building networks with associations (Pajoohesh, 2014, p. 76). The activating process to the lexical network occurs “after word recognition and used for word integration and comprehension process” (Grabe, 2009, p. 25). As words are recognized in a text other neighboring meanings, or collocates, are accessed at the same time in the lexical network.

Conceptual representations affect the process of building syntactic sentence structures. Syntactic priming refers to the stimulus response of syntactic processing and occurs when the processing of syntactic structures of one sentence affects the processing of a preceding sentence (Bock, 1986; Ledoux, Traxler, & Swaab, 2007). In other words, if a speaker produces a sentence in a passive voice, the listener will most likely produce a response in a passive voice. In comprehending sentences, challenging sentences which precede syntactically similar sentences have shorter processing times than simple sentences (Tooley, Traxler, & Swaab, 2009) as syntactic repetition reduces ambiguities in sentences (Ledoux et al., 2007). At the same time, some sentences are more challenging to understand due to their syntactic structure. For example:

1. The defendant examined by the lawyer was unreliable.
2. The defendant (O), examined (V) by the lawyer (S), was unreliable. (OVS)
3. The lawyer examined the unreliable defendant. (SVO)

(Traxler, Tooley, Pickering, & Martin, 2014, p. 906)
In reading the first sentence, at first glance, the agent of the verb *examined* seems to be the *defendant*. Typically, the agent (subject) is followed by the verb and object (SVO) in the English language. However, a thematic revision is evident as the prepositional phrase *by the lawyer* introduces the real agent *the lawyer* (OVS) (Traxler et al., 2014). Any changes in word order complicate sentence processing and comprehension. Then again, sentence two illustrates how punctuation could assist in understanding what is being conveyed: the defendant who was examined by the lawyer was unreliable.

Additionally, other comprehension studies have demonstrated in picture matching tests that participants’ interpretations of ambiguous prime sentences affected their responses to a similar target sentence (Branigan, Pickering, & McLean, 2005)

Prime sentence: *The girl poked the policeman with the umbrella*

Target sentence: *The clown poked the nurse with the pencil*

When interpreting the above sentences, participants who presumed the policeman had the umbrella were more likely to assume the nurse held the pencil. As shown, a prime stimulus influences target assignment which can mislead readers and increase misunderstanding, making the reading task even more complex.

### 2.1.4 Syntactic parsing

Previously, I have discussed essential components of reading, word knowledge, word recognition, and syntactic processing. These factors, all in their own way are essential contributors to successful reading and reading comprehension. Nevertheless, another indispensable subconscious process needing consideration is syntactic parsing. In brief, the role of syntactic parsing is to analyze grammatical information and connect forms to their semantic meanings while taking into consideration constraints, collocations, and genre of texts (Grabe, 2009). While grammar provides the rules of language, parsing is a method used to analyze a sentence syntactically. According to Chomsky (1965), humans’ have an innate parsing mechanism. With frequent exposure to language, learners’ input of multiple sequences is filtered through the parsing mechanism. Alderson (2000) argues that “the importance of a knowledge of particular syntactic structures, or the ability to process them” suggests that “the ability to parse sentences into their correct syntactic structure appears to be an important element in
understanding text” (p. 37). For reading comprehension to occur, learners must evaluate structural information from strings and chunks of words and as a result acquire the rules of grammar through parsing (Fodor, 1998). Yet, grammatical information and sentence structure are often excluded when reading comprehension is examined.

Reading does not solely depend on nouns and verbs, other structural aspects assist in creating comprehensible sentences to convey meaning. Grabe (2009) discusses the importance of grammatical cues found in sentences. These aspects involve applying various cues such as tense, prepositions, pronouns, determiners, articles, conjunctions, and adjectives. For example, by taking the nouns and verb demonstrated below and adding grammatical cues a known sentence can be formed (example 2). Without them, a sentence is incomplete and absurd as shown in example 1:

1. Score years fathers brought continent nation
2. Four score and seven years ago our fathers brought forth on this continent, a new nation

(Lincoln’s Gettysburg Address, 1863)

Another important element is word order. Generally, the agent is introduced in frontal position as the subject of a sentence. While reading a sentence, a mental picture appears in response to the subject’s presentation of someone or something performing an action. Note how the mental picture of the sentences changes by rearranging the subject and the object:

- The man stepped on the dog’s foot

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<table>
<thead>
<tr>
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<th>man</th>
<th>stepped</th>
<th>on</th>
<th>the</th>
<th>dog’s</th>
<th>foot</th>
</tr>
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Figure 1. Parsing the sentence, *The man stepped on the dog’s foot.*
Or, as Yoda from Star Wars (Lucas & Lucas, 1980) would structure a sentence:

![Syntactic Parsing Diagram]

- On the man’s foot, the dog stepped

Figure 2. Parsing the sentence, *On the man’s foot, the dog stepped.*

As illustrated, syntactic parsing is a vital post-lexical process of word recognition. In coping with language ambiguity, L2 learners need to have proficiency in parsing multiple types of sentence structures to decipher their meaning. However, due to the unlimited number of sentences which can be produced, having syntactic awareness of a language promotes identification of multiple sentence structures and increases comprehension of ambiguous meanings presented in texts. Various research verifies that syntactic parsing plays a key role in processing grammatical resources and sentence structures in reading comprehension (Demont & Gombert, 1996; Nation & Snowling, 2000; Grabe & Stoller, 2002). Needless to say, more complex sentences and ambiguous syntactic structures have more impacting effects on the reading processing time (Carpenter, Miyake, & Just, 1994). For this reason, or as Grabe and Stoller (2002) suggest, L2 learners must be exposed, extensively and intensively, to multiple types of sentence structures to increase their grammatical knowledge and develop automaticity in syntactic parsing skills.

### 2.1.5 Background knowledge

Although syntactic parsing is a crucial component of reading comprehension, building a situational model of a text is a vital component in abstracting, generalizing and extracting information from a text. When constructing a meaning of a text, learners build a situational model to link together information in a text with prior knowledge in order to construct new knowledge. Learners lacking in background knowledge of a specific subject and discourse will struggle in building a practical situational model.
Then again, learners who have efficient background knowledge can actively interact with the text by inferring, assessing, and monitoring strategy use to interpret the discourse’s conveyance of information in forming new knowledge in their memory. The new knowledge is stored in the long-term memory for future discourse processing. Reading different types of texts influences the construction of the situational model, depending on the readings purpose and text types (Grabe, 2009). Given that, reading a formal informational text, opposed to an informal narrative text, influences the situation model interpretation of the text’s meaning (Singer & Leon, 2007) because the purpose of reading a formal informational text for learning differs from reading an informal story for recreational purposes. In this study, learners must read two different types of formal texts, while interpreting the texts, concerning money management and grief, learners must ask themselves critical questions as they extract propositions, make connections, and respond to the text.

### 2.1.6 Working memory

As previously mentioned, the working memory is yet another crucial cognitive system for reading comprehension as it processes, stores, and manipulates information. It enables readers to form a meaning-based representation of a text by building a situational model (Gernsbacher, 1990; Johnson-Laird, 1983; Kintsch, 1998). In deriving meaning from a paragraph requires holding information in the memory while sentences are read (Oakhill & Garnham, 1988; Perfetti, Marron, & Foltz, 1996). When multiple paragraphs are read, readers must retain numerous concepts in order to link them together to form meaning, an assumption, or idea. In doing so, entails using higher-level integrating and inferencing processes in constructing a coherent understanding of a text. During the process, the working memory assists in storing meaning in the short term memory and as readers proceed, integrating new information and prior information from the long term memory (Cooke, Halleran, & O’Brien, 1998; Graesser et al., 1994). According to Daneman (1991), reading processes demand less working memory resources from skilled readers and as a consequence enhances their ability to store entire sentences and not partial. Lack of memory may affect learners’ intake of information, construction of meaning, and comprehension of ideas.
The short term memory and long term memory communicate with each other and make learning possible. The two form a vital link through an integrating and storing process (Grabe, 2009). At the end of an activity, the information stored in the short term memory becomes unclear and finally disappears. Luckily, some of it will have been integrated into the network of information and stored into the long term memory as learned knowledge. With time, learners develop additional background and textual knowledge which in turn promotes interpretations of texts and prediction from texts (Palincsar & Brown, 1984). In doing so, learners activate their long-term memory in recalling prelearned networks of concepts, executing semantic and syntactic processes, and using prior knowledge. Although having sufficient working memory is a necessity in generating inferencing, learners must possess efficient word knowledge of a text to derive meaning (Barnes, Dennis, & Haefele-Kalvaitis, 1996). According to Birch (2007), as sentences and passages lengthen and begin to contain more unfamiliar vocabulary, the long-term memory’s role becomes more important in retaining meaning for overall comprehension. All things considered, the psychological guessing game of reading is a cyclic process of consistent use of the short term and long term memory to form meanings and interpretations of texts.

I have established that reading involves multiple complex processes which continuously extract and integrate information and the importance of linguistic knowledge and awareness in constructing textual meaning. Let us now consider multiple complex syntactic structures and linguistic elements of formal written texts, their characteristics, and how they contribute to sentence complexity.

2.2 A Case for the Sentence

Syntax is a valuable component contributing to learners’ structural knowledge. The word ‘syntax’ refers to the systems of rules that combine multiple words into meaningful chunks of formulaic sequences, clauses, and sentences (Kamhi & Catts, 1999). With this in mind, acquiring reading comprehension of complex texts is not unlike building a house. Similar to a reader’s dilemma in constructing meaning from a complex text, a builder must have knowledge of building materials (word knowledge), foundations (word meanings), construction rules (grammatical knowledge) and infrastructural challenges (discourse levels) in constructing a building. Without
fundamental language proficiency, background knowledge of rhetorical organizational patterns, and discourse cues, reading may become not only an ordeal but also an unpleasant and discouraging experience for any reader.

Learners apply metalinguistic processes to infer meaning when processing and using contextual information. Metalinguistic awareness is defined as the ability to “reflect on and manipulate the structural features of spoken language” (Tunmer, Herriman, & Nesdale, 1988, p. 136). However, Nagy (2007) prefers to omit ‘spoken’ for written and spoken (p. 53). Metalinguistic abilities are categorized by linguistic components: phonological, morphological or syntactic awareness. While phonological awareness assists in identifying and using sounds, morphological awareness is the ability facilitating reflection and manipulation of morphological units of words, e.g. hope – hope+less+ness (Carlisle, 2003). However, when manipulating structural features learners´ apply syntactic awareness to produce and comprehend multiple grammatical structures of sentences, e.g. word order (SVO) (Catts, Adolf, & Weismer, 2006), whereas, syntactic knowledge is defined as the ability to produce and comprehend various grammatical features and structures of sentences. Although syntactic awareness and syntactic knowledge are linked, syntactic awareness develops as an offspring of learners´ syntactic knowledge to assess, correct, and manipulate language as an object (Zipke, Ehri, & Cairns, 2009). Without syntactic awareness, gaining further language proficiency would become a tedious task as reflection of sentence structures increases knowledge and use of language.

For academic and informational purposes, learners must acquire syntactic and discourse awareness of rhetorical and organizational structures. This entails having the ability to recognize discourse clues, rhetorical organizational patterns, and to establish the main idea (Grabe, 2009). Research has demonstrated that comprehension transpires through interactions which occur between comprehension processes, linguistic knowledge, and contextual features, e.g. genre and various linguistic components (McNamara & Kintsch, 1996). For example, they have established that learners´ knowledge of discourse cues and text structure influence reading in a second language considerably (Grabe, 2009; Carrell, 1984). Generally, academic and informational texts are written in formal and detached style (McCarthy, Matthiessen, & Slade, 2010). Carell’s (1992) study of university learners´ recognition and use of text structure while
reading, verified that learners who had acquired an awareness of organizational patterns and applied strategic structural strategies were more likely to remember and recall information. Jiang and Grabe (2007) emphasize the importance of learners acquiring discourse structure and rhetorical awareness to increase reading fluency and comprehension.

The complex relationship between morphological, syntactic awareness and reading development might be facilitated by vocabulary skills (Carlisle, 2007; Nagy, 2007; Nagy, Berninger, & Abbott, 2006). Nagy (2007) argues the strong connection between morphological and syntactic awareness, and its effect on vocabulary growth and increased breadth and depth of word knowledge, facilitating reading comprehension. Occasionally, learners encounter unfamiliar words in texts, e.g. the multi-morphemic word unbreakable. Having knowledge of morphological structures of words, assists in segmenting them into individual morphemes. Learners with sufficient knowledge of affixes would recognize that the word unbreakable comprises of three morphemes 1) un- (signifying not), break (verb, the root), and –able (signifying can be done). Additionally, by using syntactic awareness, a learner can recognize unbreakable as being an adjective. With this information, the learner can decipher a potential noun following the adjective as being something that cannot be broken. Such knowledge leads to additional metalinguistic awareness, language acquisition, and reading comprehension.

Research has also demonstrated a relationship between reading comprehension and syntactic/semantic abilities as learners advance in years. Scarborough´s (2005) research on children with language impairment demonstrated how they struggled to read at higher grade levels despite having appropriate word recognition skills. Another study by Catts et al. (2006) examined children´s reading comprehension in mid-elementary and higher grades. Their findings concluded that children who lacked sentence-level semantic and syntactic skills tended to be less skilled readers later on. Not to mention, Tunmer and Hoover (1992) argued that children with low decoding skills but good syntactic awareness could benefit from contextual instruction. Generally, language skills, e.g. vocabulary and syntactic abilities, increase with age (Johnston, Barnes, & Desrocher, 2008) while reliance on phonological and decoding skills decreases as more complex reading requires more language and cognitive skills (Gough, Hoover, &
Peterson, 1996). Therefore, as learners mature, challenging content and vocabulary demands higher syntactical and morphological skills in comprehending complex sentences and texts.

That being said, “reading comprehension is guided by print” (Perfetti, 1985). Scott (2009) asserts that if learners are unable to derive meaning from individual sentences, it will ultimately affect their comprehension. The ordeal learners often face with age, and higher grade level is deciphering and constructing meaning from complex sentences in informational (e.g. academic) texts. Linguistically, sentences provide the contextual environment for interpretations with morphological, semantic, syntactic, and sociolinguistic aspects. Equally important, the structure of a sentence and arrangement of lexical units affect the deciphering process and eventually how meaning is derived from a sentence. In short, you cannot have meaning without words, but comprehension of an idea cannot be acquired without conveying meaning in a sentence.

2.3 Measuring Syntactic Awareness

As this study’s purpose is to identify problematic sentence structures and their effect on reading comprehension, five types of tests are used to investigate learners’ syntactic awareness of linguistic elements and complex syntactic structures (Appendix IV). Three out of five sections of the tests are questions taken from a sample edition of the Accuplacer produced by The College Board and found online. Their services provide Advanced Placement Programs, Diagnostic Placement Tests, and SAT Placement Tests as well as research on the education community on behalf of learners, educators, and educational establishments (The College Board, 2016). The Accuplacer is a standardized test created to evaluate learners’ reading, writing, and mathematic skills and used to assess learners’ readiness for credit-bearing college courses in the United States. The three sections taken from the Accuplacer Sample Test are as follow:

1. Accuplacer ESL Language Use Test – A total of 15 questions, 1-10 and 1-5, were used from the ESL test (See Table 1). They test learners’ proficiency in using grammar in English sentences correctly. Five specific content areas are measured on the ESL test: (a) Nouns, Pronouns, Pronoun Case Structure; (b) Subject-Verb Agreement; (c) Comparatives, Adverbs, Adjectives; (d) Verbs; and (e) Subordination/Coordination (The College Board, 2016).
2. **ACCUPLACER Placement Test** – 5 questions were taken from the sentence skills placement section for native speakers of English, 6-10. This section of the test contains sentence-correction questions which require an understanding of English sentence structure by choosing the appropriate word or phrase for a particular portion of the sentence.

<table>
<thead>
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<tr>
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<tr>
<td>Relative Pronoun Evaluation</td>
<td>Academic English Online</td>
<td>15 - 19</td>
</tr>
</tbody>
</table>

The last two sections of the syntactic test were taken from the Queen Mary University of London’s website, Academic English Online (Tweddle, 2010). The online website was created for learners of Queen Mary to develop their language proficiency in academic English. The website offers, amongst other tests, a grammar test involving relative clauses. This section of the test measures participants’ knowledge of the complexity of frequently used relative pronouns/adverbs. The objective of these questions was to analyze 1) whether they could determine the correct relative pronoun for 4 sentences (questions 11-14), and 2) how well they recognized defining and non-defining relative clauses in 5 sentences (questions 15-19).

The above was a summary of the instruments applied in the syntactic awareness test. Instead of outlining its structure in the methods section, I thought it to be more fitting to enlighten readers with a detailed review of the linguistic and syntactic elements tested in the study before they began reading about their characteristics and how they add to sentence complexity. Having said that, let us move on and explore features of the complex sentences applied in the test which manipulate different types of tools of language in constructing detached and formal texts, adding further to the ambiguity and complexity of reading informational texts.
2.3.1 Academic and informational texts

Unlike spontaneous, informal, and conversational language, formal and written academic language has its own writing conventions. A strong predictor of informational texts is their e.g. density, use of nominalization, prepositions, passives, and phrasal coordination (Biber, 2006). In general, academic texts are written to persuade the reader. For this reason, writers’ arguments reflect the social communities disciplinary specificities. Swales (1990) compares and defines the discourse community as sociolinguistic speech communities where "a speech community typically inherits its membership by birth, accident or adoption, a discourse community recruits its members by persuasion, training or relevant qualification” (p. 24). As Hyland (2011) discusses, multiple variations can be found in a community’s formulation and negotiation of a text context and their rhetorical preferences closely coincide with their general assumptions, methods of discourse, and knowledge. For newcomers, these rhetorical conventions and structures may be difficult to comprehend. Therefore, it is necessary for them to become aware of key features commonly used in informational texts.

Acquiring adequate morphosyntactic, semantic, and pragmatic knowledge of structures increases reading comprehension of informational texts. As writers within specific disciplines often need to use ideas and voices of other members, it is necessary for learners to understand the practices of metadiscourse. This involves knowing how to analyze the discourse’s norms and standards of the social engagement, or as Hyland (2005) claims "metadiscourse incarnates the idea that writing and speaking are just the exchange of information, goods, or service, but rather involves the personalities, attitudes, and assumptions of the people who are communicating" (p. 3). That being the case, metadiscourse helps to evaluate the resources used by readers to understand texts and how they in return can respond to other writers' theories or ideas effectively.

Corpus studies have demonstrated a distinction between the constructions of sentences depending on genre, conversational vs. informational. In examining informational texts, their structural features differ from other genres, e.g. conversational language and narrative texts. Researchers such as Halliday (1987) and Biber (1986) have identified structural features by comparing written informational texts with oral language. For the purpose of explaining more effectively these grammatical
specificities, I will illustrate aspects such as lexical density, formulaic sequences, complex sentences, normalization, passives, and phrasal coordination further on. Drawing on the works of the previously mentioned researchers, Schleppegrell (2004) summarized typical features of academic texts further and defined three types of characteristics: field, tenor, and mode. The characteristics of field in a common informational text, often presents a high lexical density rate and vocabulary of technical and abstract nature (nouns, verbs, and adjectives). However, the characteristics of tenor can demonstrate distance and the voice of authority by using more declarative sentences rather than interrogative and imperative. Different from tenor, the textual organization of academic texts, or mode, is conveyed through clausal subordination strategies. Another feature of mode is how themes occur more frequently at the beginning of sentences and become more complicated with more details as the sentences transpire. In view of this, special attention should be given to morphological and grammatical aspects to increase learners’ awareness of complex rhetorical discourse components which characterize formal texts.

In evaluating the metadiscourse, researchers have detected multiple linguistic tools in interactions by differentiating various aspects of written language. Hyland (2000) asserts that these “linguistic resources are used to organize a discourse” (p. 109). These linguistic forms and features make up specific genres and are important assets to know for the purpose of enhancing learners’ reading skills. As previously mentioned, I will now give examples of specific linguistic elements influencing reading comprehension, beginning with field, or lexical density.

2.3.1.1 Higher density of words

Lexical density is measured by the rate of content word occurrences opposed to grammatical items. Mundane spoken language is typically categorized as not only having lower lexical density but also lacking content as “much of the content is ‘filled into’ the grammatical words by the context”, e.g. ‘It’s over there’ (McCarthy et al., 2010, p. 55). Unlike spoken language, academic language is not only denser in nature, or more difficult to understand, but at the same time it is measurably denser in terms of content words (moon, happy) than in grammatical forms (she, were, in) (Halliday,
Not to mention its informational density as high amounts of information is argued in each written paragraph and text.

In compacting information, academic texts use more nouns in each clause to introduce concepts. When content words are analyzed in non-embedded clauses, the rate of lexical density can be measured by two types of texts (Halliday, 1994).

---

Text 1
1. The formation of sedimentary rock is closely associated with water.
2. One type forms
3. when water carries soil, pebbles, and other particles to the ocean floor
4. where these sediments become rock
5. The second method involves chemicals dissolved in water.
6. By evaporation and precipitation of substances like calcium carbonate, sedimentary rocks can form.

Lexical density: 30/6 = 5.0

Text 2
1. And um, like um sometimes if, um, like you think that the teacher?
2. um, if you raise your hand
3. and she says “No”
4. so she’ll pick on the peoples that don’t know it?
5. so you raise your hand
6. she picks you
7. and you go
8. “Well, I think,
9. I didn’t, um, well.”
10. That’s what I said
11. like the people raise their hand?
12. and —and she — because they think
13. they’re going to pick the person who don’t know it?
14. and when she picks on you
15. she says, . . . “Oh.”

Lexical density: 23/15 = 1.5

---

Figure 3. Lexical density of a formal text and informal text (Schleppegrell, 2001, p. 440).

Figure 3 calls attention to the difference in lexical densities of Text 1(30/6=5.0) and Text 2 (23/15=1.5), demonstrating Text 1 as being three times denser than Text 2. Learners who read Text 1 must process more concepts per clause due to its structural characteristics. When reading texts containing higher levels of density, they become correspondingly more difficult to parse and place higher workload on the short term and long term memory when extracting information.
2.3.1.2 Formulaic language.

Ideas cannot be conveyed fluently without structuring multiple words together by syntax and often enough through multiple word phraseological units (*Any given day, I suppose so, Who cares*), otherwise termed formulaic sequences.

Various types of formulaic language exist and have been categorized by Grant and Nation (2006) into three categories:

1. **Core idioms** – can be defined as a chunk of words which individually do not relate to the meaning in general and/or historical meaning has been lost (*out of hand, serves (someone) right*).

2. **Figuratives** – are a chunk of words which have both literal and figurative meanings. Figurative language is used as a rhetorical device to effectively persuade a reader by appealing to a reader with figures of speech, e.g. metaphors (*We’ll cross that bridge when we come to it*).

3. **Literals** – are word units which literally mean what they are conveying as a whole (*thank you, I suppose*) and are beyond question the largest group. Collocations, or two-word pairs, belong to the literal group and are useful chunks in gaining fluency and accuracy.

Each type has its own function in conveying meaning whether literally or figuratively, assisting conveyors to express ideas fluently and productively.

Formulaic language has been identified through corpus analysis and is an influential component of fluency. By taking the 40 million word Longman Spoken and Written English Corpus and identifying three to six-word strings of words, Biber and Conrad (1999) calculated 30% of conversation consisted of sequences (45% if two-worded collocations were included) and 21% in academic prose. Erman and Warren’s (2000) analyzation of language estimated 52-58% being formulaic. Knowledge and use of formulaic language are believed to increase native speakers’ fluency (Pawley & Syder, 1983). Nattinger and DeCarrico (1992) highlighted the necessity of sequences in language as the multi-word lexical phenomena that exist somewhere between the traditional poles of lexicon and syntax, conventionalized form/function composites that
occur more frequently and have more idiomatically determined meaning than 
language that is put together each time (p. 1).

Larsen-Freeman and DiCarrico (2010) further discuss the use of form/functions 
composites as fixed formulaic sequences. Such as on the other hand, which can function 
as a transition of topics in discourse, Another type of lexical phrases are relatively fixed 
sequences offering open slots, e.g. a ____ ago. The open slots offer variation in 
expressing time (a day/year ago). Other sequences offer slots for multiple options, e.g. 
to express feelings (sympathy), I’m (really) (very) sorry that X (X being an individual 
whole, or clause (you lost your ring) (Larsen-Freeman & DiCarrico, 2010, p. 26). It is 
evident that formulaic sequences make up a large portion of language and serve as 
textual, referential, and communicative functions of expression, spoken and written. For 
this reason, formulaic language is an essential part in enhancing language proficiency 
and reading fluency.

2.3.1.3 Nominalization

Another grammatical attribute found in language, especially in academic texts, is 
nominalization. The key participants in creating texts are nouns and nominal groups, or 
noun phrases. They are grammatical necessities in introducing actors and receivers of 
action. Nominalization process occurs when verbal information transforms into nominal 
information (Scott & Balthazar, 2010). In conveying meaning, a writer semantically and 
structurally chooses to use nominal structures to present specific, abstract and technical 
propositions in order to add character and voice to a context, notion, and agency (Fang, 
Schreppegrell & Cox, 2006). This particular device assists writers in modifying, 
extending, and condensing information and in turn increases academic texts´ density.

Halliday (1993) compares the phenomenon of nominal groups as grammatical 
metaphors used for a particular meaning that is not common under other circumstances.
As previously mentioned, formulaic sequences give language its figurative or 
metaphorical characteristics. At the same time, these grammatical metaphors are 
notoriously difficult for learners to comprehend (Nagy & Townsend, 2012). For 
example, nouns normally refer to persons, places, and things and are found in the 
subject and object of a sentence. Verbs, on the other hand, determine the agent´s actions 
in a sentence. Nonetheless, in academic texts, nouns may change their function by
representing processes and abstract concepts implementing actions, e.g. generate/generation, obligate/obligatory/obligation. This syntactic phenomenon is used to insert nominalized verbs and adjective as nouns at the beginning of a noun phrase to express information concisely (e.g. They generated a sequence, Their generation of a sequence). Scott and Balthazar (2010) demonstrate how a verb (has been found) in a previous sentence becomes a noun (The find). In providing a link, the previous sentence is summarized into an abstract noun.

The oldest known fossil skeleton of a human ancestor--a female Ardipithecus Ramidus specimen nicknamed "Ardi" (pictured)--has been found, scientists revealed yesterday. The find reveals that our ancestors underwent a previously unknown stage of evolution more than a million years before Lucy, the early human ancestor specimen that walked the Earth 3.2 million years ago (National Geographic Kids, 2009).

Manipulating everyday language into specialized technical and abstract terminology assists in building ideas, theories and creating arguments. At the same time, extensive manipulation through nominalization challenges learners’ ability to process, decode, and encode dense information into new knowledge.

2.3.1.4 Syntactic structures of informational texts

Words alone do not only generate ideas, but the structure of a sentence also matters in establishing how words function together. While shorter sentences place less demand on the working memory, longer sentences have a tendency to contain multiple clauses, higher density, and more information relating to each other. An important aspect in enhancing reading comprehension is acquiring knowledge of syntactic structures. Alderson (2000) emphasizes

“the importance of knowledge of particular syntactic structures, or the ability to process them, to some aspects of second language reading…” and asserts that “the ability to parse sentences into their correct syntactic structure appears to be an important element in understanding text” (p. 37).

Simple syntactic rules may be acquired easily whereas more difficult grammatical rules are by nature not as simple in processing and understanding. According to DeKeyser
(1995) and Robinson’s (1996) research, learners acquired simple morphosyntactic rules more easily explicitly and complex rules better implicitly. Improving learners’ awareness of syntactic structures and function helps them to evaluate multiple rhetorical devices, grammatical patterns, and textual arguments used in delivering propositions and information in informational texts. This entails increasing their knowledge of structures not commonly used in daily interaction within the classroom but often found in discourse. In light of this, I will discuss influential complex sentence structures affecting reading comprehension.

**2.3.1.4.1 Simple, compound, and complex sentences**

Before I begin to examine aspects influencing the reading process of sentences, a few essential syntactic constructions need to be reviewed. First, sentences are made up of grammatical phrases, or chunks of words, and clauses. Structures consisting of a subject-verb relationship is a clause (Celce-Murcia & Larsen-Freeman, 1999, p. 20). While an independent or main clause can stand alone, a dependent or subordinate clause cannot:

- Although they live far apart, they are still friends.
- *Although they live far apart (dependent adverbial clause)*
- they are still friends (independent main clause)

Simply put, simple sentences can stand independently as independent clauses. They include one subject, a verb, an object, and occasionally an adverbial subordinator. On the other hand, a compound sentence contains two or more clauses connected with a coordinating conjunction:

- She went shopping, because the fridge was empty.

In complicating issues further, complex sentences may consist of multiple clauses, e.g. a main clause and one or more subordinate clauses.

- Sally frequently jogs, because she wants to stay in shape for the competition.
This sentence consists of the main clause *Sally frequently jogs*, a subordinate clause *because she wants to stay in shape*, and an embedded clause *for the competition*. With this in mind, let us proceed and examine the complexities of subordination further.

### 2.3.1.4.2 Subordination

In everyday mundane discussion, simple sentences are often compounded and used to convey meaning. For example, *I’m thirsty and Tommy is hungry* are two independent clauses, or simple sentences joined together with a coordinating conjunction, *and*, to signal a logical relation and addition. Joining the two makes the expression less discordant and more harmonious. Other coordinating conjunctions e.g. *but, for, nor, or, so*, and *yet* serve as textual devices to signal temporal sequence, consequence, and comparison (Schleppegrell, 2001). Through subordination, information is grammatically structured, contributing to textual organization (mode).

Unlike conversational discourse, academic sentences are lengthened with multiple clauses and subordination. When complex sentences are combined, the main clause, which can stand alone, is joined with other dependent clauses with subordination. These additional clauses are logical arguments that have been compressed into a sentence to convey an idea. It takes time and effort for a writer to express propositions and meaning by constructing multiple clause sentences in order for a reader to extract information for further use. Typical subordinating conjunctions writers utilize in constructing complex sentences are *although, as, as if, because, before, even though, rather than, that, though, unless, when, where, whereas, wherever, whether, which*, and *while* (Wells, 2009). On average, an academic sentence may include three or more clauses, complicating the reading process for an inexperienced reader of informational texts to extract the main idea, its relationship with other supporting ideas, and logical meaning.

Understanding how these grammatical functions construct meanings gives learners the advantage to uncover and recover ideas that they would normally miss and as a result obtain a greater understanding and use of what is being conveyed. Such advantage promotes comprehension and gives purpose to the reading, enabling learners to enjoy the true value of reading. For this reason, I will very briefly explain three types of subordination which constitute a majority of multiclausal sentences.
2.3.1.4.3 Adverbial clauses

First, there are adverbial clauses. They commonly connect themselves to the main clause with an adjoining conjunction, e.g. even though and begin with subordinating conjunctions, making them subordinate, or dependent, on the main clause. Their function is to expand on the main clause’s verb by providing additional information about time, manner, or place, tasks often given to singular adverbs (Scott & Balthazar, 2013). In doing so, adverbial clauses descriptive nature (tenor) provide answers to questions such as why, how, when, to what degree, where (Benner, 2011).

Although a typical adverbial clause is usually found after the main clause as shown below;

The entire city celebrated after Boston won the pennant in 2004.

(taken from Benner, 2011)

It can also appear in front of the main clause with a comma and answer when the city celebrated:

After Boston won the pennant in 2004, the entire city celebrated.

Berman (1984) studied the problematic nature of language acquisition and demonstrated learners’ difficulty in identifying complex structures in sentences when the adverbial phrase was positioned before the main clause. As parsing sentences is an important aspect in reading comprehension, without a doubt, the processing system becomes even more complicated if learners are confronted with unusual syntax.

2.3.1.4.4 Object complement clauses

The second type of subordinate clauses is the object complement clause. Normally they begin with that. However, it is not necessary to use that at the beginning of an object complement clause, and the sentence remains grammatical even though it is omitted (Scott & Balthazar, 2013). The following example illustrates an adverbial clause in the front position of the sentence underlined and in italics:

Even though he had already broken the record for the most gold medals, he stated that his goal was to win even more in the next Olympic Games.

(taken from Scott & Balthazar, 2013)
The second half of the sentence demonstrates an object complement clause. They can also be identified as complementing the main clause verb and beginning with words such as *what, when, who, where*:

She asked **when they would leave.**

He decided **what they would do.**

In conveying ideas and opinions, academic language often uses verbs addressing communicative acts (*be, tell, say, exclaim*) and mental states (*think, know, conclude, decide, predict*) (Scott & Balthazar, 2013). These verbs are transitive verbs which have a tendency to take on object complements beginning with e.g. *that.* Nevertheless, some limitations and restrictions apply as not all verbs can add on object complements (e.g. *win* (intransitive verb)).

2.3.1.4.5 **Relative clauses**

The third type of subordinate clause found in sentences is the relative clause. Their embedded nature tends to increase processing issues and affect reading comprehension considerably. Mainly due to additional density and depth of information needed to be processed by the working memory while moving from one clause to another (Berman, 1984). A relative clause´s function is to give additional information about a noun and can modify any noun found in a sentence, postmodification. As previously discussed, the longer the sentence, the more complex it is to process. By modifying nouns, or noun phrases (NP), sentences lengthen by premodifying before a NP and postmodifying after a NP. To illustrate this phenomenon, let us take a simple sentence containing five words,

The amendment was a disaster.

and add some complexity to it by premodifying the subject with adjectives and postmodifying the subject (NP) *amendment* with an embedded relative clause:

The **thoroughly rewritten and meaningless amendment inserted by his aide** was a disaster.

(taken from Scott & Balthazar, 2013)
As illustrated, center-embedded relatives which postmodify a subject noun interrupt the connection between the subject and the verb with long-distance dependencies. Traxler et al. (2002) study demonstrated that long noun phrases often containing embedded relative clauses increase children’s and adults’ difficulty in processing complex syntactic structures. Generally, these types of clauses can be identified quickly as they commonly begin with relative pronouns (that, who, whose, which).

The lady whose house burnt down bought a new apartment.

The man who won the prize left early.

She gave me a puzzle which tests your wisdom.

However, that can be omitted for a nonfinite verb (-ing ending) impacting learners’ parsing, processing and comprehension of the sentence. For example, the following sentence is missing the relative pronoun that and instead headed with an infinitive verb returning (taken from Scott & Balthazar, 2010):

The blood returning from the body through the right side of the heart and to the lungs contains cellular waste. (Life Science, 2005, p. 542)

A less skilled reader might link the verb contains with the lungs rather than associating it with the main clause’s subject blood. Learners with more exposure and categorized as fast readers have more experience in reading object-relative sentence structures. However, slow readers tend to rely more on grammatical cues. If these grammatical cues are misleading learners may miscomprehend the true meaning within the sentence (Traxler et al., 2002). Syntactic complexity and knowledge of grammatical variations can increase learners’ processing, perception, memory, and reasoning of a text. For this reason, acquiring additional knowledge of how complex sentences are formed can enhance learners’ comprehension of them. Not to mention when learners encounter multiclausal structures.

2.3.1.4.6 Multiclausal structures

The complexity of sentence structures and contextual ambiguity increases as clauses are systematically stacked up. As Scott and Balthazar (2013) assert, “multiclausal sentences may contain all three types of subordinate clauses or more than
one of each type” (p. 22). In counting the number of clauses in a sentence, the verbs are identified as each clause contains a verb. For example, the sentence below is a five-clause sentence beginning with an adverbial clause (1. *Although the president*) with an embedded object complement clause (2. *that the recovery was slow*).

Although the President acknowledges that recovery is slow, he will not deviate from key policies that his team announced earlier in order to stimulate growth.

(Scott & Balthazar, 2013)

Thereafter, the main clause (3. *he will not deviate from key policies*) is postmodified by a relative clause (4. *that his team announced earlier*) which could be excluded without the sentence losing meaning. Finally, the fifth clause, an adverbial clause (*in order to stimulate growth*) is embedded within the relative clause to give additional information. Sentences with multiclausal structures are particularly difficult to comprehend correctly without syntactic awareness of how embedded clauses postmodify previous NPs.

### 2.3.1.4.7 Agent-patient order

As I mentioned before, English is a subject-verb-object (SVO) language. Therefore, the canonical word order positions the subject (agent) at the front of the sentence which is followed by a verb, then an object (patient) and finally adverbials are situated at the end.

(S) The teacher (V) scolded (O) the students for *their tardiness* (adverbial clause).

Despite this, one grammatical device used in creating an impersonal and authoritative position in register is reversing word order to OVS.

(O) The students (V) were scolded by (S) the teacher for their tardiness.

In doing so, a writer constructs a passive sentence by removing identifiable agents from the frontal position and having them follow the verb further into the sentence (Scott & Balthazar, 2010):

The oldest known fossil skeleton of a human ancestor—a female Ramidus specimen nicknamed "Ardi" (pictured)—has been found, scientists revealed yesterday. (National Geographic Kids, 2009)
The sentence does not clearly display who found the fossil skeleton until the last clause is read, the *scientists revealed* the findings. These types of sentence structures tend to be unfamiliar and unusual to second language learners and have a tendency to increase their processing load (Berman, 1984; Scott & Balthazar, 2010). Such constructions add complexity to sentences, making them more difficult to comprehend.

2.3.1.5 **Voice - active and passive sentences**

Another conflicting element of informational and academic texts is voice. A key principle for a writer in producing individualism and textual ownership is through voice (Hyland, 2003). Writers within specific disciplines convey ideas by choosing various grammatical devices for the purpose of representing themselves and giving texts voice. However, employing and understanding a discipline’s voice is challenging for native speakers and second language speakers (Cadman, 1997). As Celce-Murcia and Larsen-Freeman (1999) state “voice is another linguistic device that languages employ to allow for different constituents to function as themes” (p. 22). By using an active voice, the subject functions as the theme’s agent of action of the theme (Celce-Murcia & Larsen-Freeman, 1999). Theme, in this respect, gives the „point of departure of the message“ (Halliday, 1985, p. 38). In contrast, the passive voice focuses on the condition or item performed by the agent, generating an impersonalized stance (tenor). As a result, the passive defocuses the agent (Shibutani, 1985), giving grammatical meaning rather than lexical. Generally, the passive is applied when the object is more important to the theme than the agent:

*I was very much respected by the management*, even though I drove the people I worked with insane, because I had standards they couldn’t cope with.

(Terkel’s *Working*, taken from Thompson (1987), p. 503)

Another way of illustrating the difference is examining how the theme of the sentence changes by rearranging the sentence from active to passive:

*Darwin* studied the fauna of the Galapagos Islands. (active, Darwin the agent)

*The fauna of the Galapagos Islands* was studied by *Darwin*. (passive, The fauna, or the receiver, takes subject position)

This rearrangement of positions permits a thematic reversal of conventional language.
2.3.1.6 **Phrasal coordination**

Coordination is a syntactic construction involving the combining of two or more units into a larger unit (Haspelmath, 2007). By using a conjunction, phrasal units are merged together without losing their semantic relations with one another. However, for noun (NP) and prepositional (PREPP) phrases to be combined they must have the same semantic role in order for the sentence to be grammatical.

The United States Army, Air Force, and National Guard met in Paris. All three participants meet with each other, creating a relating occurrence between them. Aside from subordination, coordination contributes greatly to the complexity of informational syntax and can be found in any type of academic texts for stylistic purposes (Klinck, 1992). Use of phrasal coordination within texts is a strong indication of an informational text where multiple complex noun and prepositional phrases occupy a text.

2.3.2 **Summary**

Through written texts, writers construct representations and negotiation of concepts and meaning. In doing so, they create textual and interpersonal meaning (Silva & Matsuda, 2010). For learners to read complex texts entails having not only knowledge of morphological, semantic, and grammatical aspects, as previously discussed, but it also means that they need to have an awareness of other cohesive and sociolinguistic devices which generate cohesion and coherence in texts, e.g. lexical density, formulaic sequences, complex sentences, normalization, passives, and phrasal coordination. Having knowledge of complex nominal groups (field), adverbial clauses and passive voice (tenor), as well as subordinating patterns influencing textual organization (mode), assists readers in navigating through complex sentences structures and ideas. Because this study focuses on syntactic awareness, elements such as density and formulaic sequences are not specifically discussed in Chapters 4 and 5. However, they cannot be overlooked as their presence and contribution to sentence and textual complexity in the reading comprehension tests are undeniable. Their readability and coverage rates are clarified and discussed in the methods chapter of the study. Other structural elements will be discussed in connection with the study’s tests and outcomes in the order of their occurrence.
2.4 **English after Graduation**

Reading in English for multiple purposes has become a crucial skill for many who seek prosperous employment opportunities after graduation. Today’s contemporary computerized and globalized world requires learners to acquire these skills not only in their L1 but also in their L2. Like other countries, globalization of English has affected the linguistic reality in Iceland. For example, multiple job advertisements published online and in newspapers require good English proficiency of new employees. Often enough, learners’ do not associate their reading ability to employment prospects or success (Jeeves, 2013). For many, their overestimation of capability tends to decrease soon after they are exposed to real life situation connected to their employment environment.

Being faced with real world situations where knowledge of informational texts and formal language is crucial, gives newly graduated individuals a reality check. Birna Arnbjörnsdóttir (2007, 2015) asserts that Icelandic learners’ exposure to English is more receptive and colloquial while at the same time their knowledge and command of formal registers are insufficient. This assertion is established in Jeeves’s (2013) study as newcomers to the workforce expressed insecurity and disappointment with their ability in articulating formally and reading formal texts. They recognized their own attitude towards learning English the problematic source and commonly expressed the usefulness of learning more complex grammar with new vocabulary as it contributed to advanced understanding and correct expression.

To establish a linkage between the educational system and the work environment, Icelandic upper secondary schools and technical colleges must focus on improving learners’ overall language skills. Giving special attention to rhetorical features, patterns, and specificities assist learners’ recognition of complex and socially constructed sentence structures characterizing informational texts. For this reason, their general English reading proficiency of informational texts needs to be tested to establish whether or how complex grammar affects reading comprehension. The theoretical literature in this chapter discussed the psychological and cyclic process of reading. In addition, the case for syntax’s contribution of rhetorical and syntactic features to reading comprehension was argued. Having presented the basis for this study, the following chapter measures the nature of Icelandic upper secondary schools’ depth of
English vocabulary, syntactic awareness, and reading comprehension. The research questions are:

1. What is the Icelandic upper secondary school learners’:
   1) vocabulary depth,
   2) syntactic awareness, and
   3) reading comprehension?

2. Is there a relationship between the Icelandic upper secondary school learners’ depth of vocabulary, syntactic awareness, and reading comprehension?

The participants have not received any previous preparation; rather they are evaluated by their acquired knowledge through their former educational instruction. Therefore, three tests are applied to characterize the participants’ proficiency.

As learner progress through school, they are exposed to more complex texts. Due to the nature of complex sentences, less skilled readers emerge as their education proceeds despite having adequate word recognition skills (Scarborough, 2005). For successful reading to take place, learners need to have efficient linguistic knowledge and awareness in constructing textual meaning. As sentence structures become more complex, the necessity of having adequate syntactic awareness of linguistic and syntactic devices frequently used in informational texts becomes more apparent. That is to say, to establish the main idea of what is being conveyed, learners must acquire the ability to draw and manipulate meaning from chunks of formulaic sequences at the sentence and text level. According to Jeeves’s (2013) study, newly graduated individuals’ experience a change of heart towards their misconceived attitudes of their English ability and display a deeper understanding of the importance of learning complex grammar along with new vocabulary. For this reason, the case for the sentence holds relevance, as is essential to identify problematic rhetorical and grammatical specificities causing comprehension difficulty at the sentence level for the purpose of increasing potential jobholders’ professional and personal success.
3 Method

As previously discussed, syntactic awareness is an important aspect of reading and testing learners’ awareness gives educators insight into learners’ comprehension gaps needing improvement. In this chapter, the study itself will be explained and presented with results, discussion of results, and a conclusion. As vocabulary depth, syntactic proficiency, and reading comprehension are complex and multi-dimensional constructs, the researcher applies multiple test types in order to evaluate diverse variables against each other to measure the relationship between elements. I begin by outlining the study’s methodology; its design, participants, instruments, procedure, and data analysis methods.

3.1 Participants

This study is a quantitative study to obtain information from secondary school learners enrolled in two schools in Reykjavík Iceland. The study was carried out in the middle of March 2017 with 68 Icelandic learners in their first to second year of studies. Two tests’ results were not applicable in the study as one was incomplete and the second was answered by a non-native Idaho. This left 66 participants in the sample taken from both schools.

The data collected for this study was acquired from 66 participants attending two secondary level comprehensive schools in Iceland. Four classes from two equivalent courses from each school were chosen as test groups, hereafter referred to as K1, K2, T1, and T2. The courses were evaluated by reading their descriptive information and collected confirmation of the courses’ level according to The Common European Framework of Reference for Languages (CEFR). CEFR is an international standard used to describe learners’ language skills. Both courses were defined as B2 level courses preceding C1 level courses at the participating schools. As stated by the CEFR, learners at B2 level should have the capability of achieving most language goals and ability in expressing themselves on a range of topics.

The 66 participants responded to a short survey questionnaire (Appendix II) on their background (see Table 2). In comparing the four groups, they were found to be slightly dissimilar. Responses revealed their ages varying from 16-23. All were native
speakers of Icelandic and two stated they had lived in an English speaking country for 1-2 years. Statistically, the 4 groups consisted of 28 females (42.5%), 31 males (47%) and one unspecified gender (1.5%). The gender proportion reflected the schools as a majority of male learners attended one of the schools regularly; 27 males/7 females/1 unspecified gender, against 10 males/21 females from the other school. The groups reported having begun learning English in the third grade (2.94). In general, the K1 group had learned English in school longer than other groups (2.56) and T1 had learned English for a shorter period of time (3.33). Their field of study ranged considerably from vocational programs (restaurant service, electrical technology, carpentry, informational technology, design) to various general studies leading to the matriculation exam (natural sciences, economics, social sciences, general studies (almenn braut)).

Table 2. Background Survey Questions and Mean Scores

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>17.22</td>
<td>16.89</td>
<td>16.81</td>
<td>17.29</td>
<td>17.07</td>
</tr>
<tr>
<td>Lived in an English speaking country</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Years living abroad</td>
<td>0</td>
<td>0</td>
<td>1.5</td>
<td>0</td>
<td>1.5</td>
</tr>
<tr>
<td>Began to learn English in school (grade)</td>
<td>2.56</td>
<td>3.08</td>
<td>3.33</td>
<td>2.79</td>
<td>2.94</td>
</tr>
</tbody>
</table>

On average, the groups showed impartial interest in learning English in school. Thus 33% marked very much interest, 9% marked little interest, and 57% marked neither. This means that 57% of the participants demonstrate impartialness towards learning English in school, while 33% showed very much interest and 9% little interest. Groups T1+T2 demonstrate more interest (40%) than in groups K1+K2 (26%), or a 14% difference between groups. Notably, T1’s (52%) positive responses towards learning English are distinctively higher than reported in groups K1 (28%), K2 (23%), and T2 (21%).
Table 3. Learners´ Interest in Learning English in School

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very much interested</td>
<td>5 (28%)</td>
<td>3 (23%)</td>
<td>11 (52%)</td>
<td>3 (21%)</td>
</tr>
<tr>
<td>Little interested</td>
<td>1 (5%)</td>
<td>1 (8%)</td>
<td>3 (14%)</td>
<td>1 (7%)</td>
</tr>
<tr>
<td>Neither</td>
<td>12 (67%)</td>
<td>9 (69%)</td>
<td>7 (33%)</td>
<td>10 (72%)</td>
</tr>
</tbody>
</table>

In comparing these results with when the groups began to learn English, it can be observed that T1 (grade; M= 3.33) has learned English for the least amount of years compared to K1 (M=2.56), K2 (M=3.08), and T2 (M=2.79). In addition, T1 (M=16.81) is the youngest group in comparison to K1 (M=17.22), K2 (M=16.89), and T2 (M=17.29). As illustrated, T2 (M=17.29) is the oldest group and display the least amount of interest (little interest (7%) and neither (72%)). In general, the groups´ responses to the questionnaire illustrate a variance between groups in age, interest, and years learning English.

In compliance with law and regulations, permission slips were sent out to guardians of participants under the age of 18 for their consent (Appendix I). Additionally, The Icelandic National Data Protection Authority was informed of the study.

3.2 Instruments

To measure participants´ depth of vocabulary, syntactic awareness, and reading comprehension, 3 different instruments were chosen to investigate the complex relationship between the variables to answer the research questions. The Vocabulary Knowledge Scale (Appendix III) was selected to measure the participants´ vocabulary depth of 16 words and 4 phrases taken from the overall test. The syntactic awareness test comprised of grammar proficiency and complex syntactic construction typically encountered in informational texts (Appendix IV). Five different types of online sample questions were taken from the College Board Accuplacer and the Queen Mary University of London´s website, Academic English Online. The instruments chosen required participants to evaluate sentence structure and choose correct grammatical items. Finally, two reading comprehension tests, one SAT test, and one Compass test, with four multiple-choice questions were presented to measure comprehension of
informational texts (Appendix V). In calculating participants’ vocabulary depth, the VKS answers were assessed on a scale from 1-5. Some items were incorrect and were marked according to Paribakht’s and Wesche’s prescribed criteria (Figure 4). The VKS test provides an overall score from 0-100. In addition, the correct answers from the syntactic and comprehension test were calculated. Participants could score an overall score from 0-29 on the syntactic test. The two comprehension tests with 8 multiple choice questions were marked and could give a score from 0-8.

### 3.2.1 Measuring vocabulary depth.

Vocabulary depth tests are inherently productive in nature and provide various tasks, such as translating and productive writing. The Vocabulary Knowledge Scale (VKS), devised by Paribakht and Wesche (1993), is a distinguished test in determining the stages of learners’ developing knowledge. The VKS is a self-report test where learners read a word, or phrase, and evaluate their depth of knowledge of that word (see Appendix III). It is a five-category elicitation scale and provides a representation of learners’ knowledge by using a five-point scoring scale as shown below in Figure 4.

<table>
<thead>
<tr>
<th>Self-report categories</th>
<th>Possible scores</th>
<th>Meaning of scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>1</td>
<td>The word is not familiar at all.</td>
</tr>
<tr>
<td>II.</td>
<td>2</td>
<td>The word is familiar but its meaning is not known.</td>
</tr>
<tr>
<td>III.</td>
<td>3</td>
<td>A correct synonym or translation is given.</td>
</tr>
<tr>
<td>IV.</td>
<td>4</td>
<td>The word is used with semantic appropriateness in a sentence.</td>
</tr>
<tr>
<td>V.</td>
<td>5</td>
<td>The word is used with semantic appropriateness and grammatical accuracy in a sentence.</td>
</tr>
</tbody>
</table>

Figure 4. VKS scoring categories – Meaning of scores

In evaluating learners’ correct answers, their score is dependent on how well they answer in each category. For example, if learners answer incorrectly in categories III, IV or V, they receive a score of 2. Thus, the word may be familiar, however, the meaning of the word is unknown to them. If learners have seen the word and can translate the meaning of the word or produce its synonym, they receive a score of 3. Given that learners know the word and can produce a translation or synonym, they receive a score of 4. Conversely, if they use the word semantically incorrect in a
sentence in category 5, learners will also receive a score of 4. Learners receive a score of 5 if they produce a sentence where the target word is used grammatically and semantically correct, even though other aspects of the sentence are incorrect (Paribakht & Wesche, 1993). Although the VKS may demonstrate learners’ depth of vocabulary and development, it does not illustrate learners’ overall word knowledge of the target words. On the other hand, the VKS may give an accountable, self-reported outcome.

Words and phrases tested in the VKS are words participants encountered in the syntactic and reading comprehension tests. The test was administered in a text analyzer, Online-Utilizer.org (Adamovic, 2009), to establish word frequency of vocabulary items and phrases in the test. Information acquired from the database-assisted in randomly selecting 16 words and two phrases (stages of, go through the). Both phrases occur twice in the text. The words occurrences ranged from 2-17 incidents. An additional two phrases were chosen by the researcher (to put the case, to assign blame) after reading through the test.

3.2.2 Measuring syntactic awareness

As outlined in the literature review, the syntactic awareness test consists of five different types of tests. Please refer to Appendix IV and section 2.2 where a complete summary of the test is described.

3.2.3 Measuring reading comprehension

Two texts developed for English native speakers of different levels were chosen to evaluate the participants’ reading comprehension, one SAT Reading Test, and one Compass Test. The first text was taken from a website offering free a SAT Reading practice test designed to evaluate test-takers’ reading comprehension and to increase future SAT test-takers’ knowledge of SAT tests (Morrison, 2017a) (Appendix V). Similar to the Accuplacer test, the SAT Reasoning Test is developed by the College Board and utilized in learners’ application process to colleges and universities within the United States. The second text, “The Grieving Process”, is a Compass Reading Practice Test (Morrison, 2017b) (Appendix V). The Compass Test is a viable alternative to the standardized SAT test as it also is designed to determine whether learners have adequate reading skills required in entry-level college and university courses (Compass
Education Group, 2017). In all, nine multiple-choice questions accompanied the passages to measure comprehension of the text.

According to Hu and Nation (2000), learners need to have a coverage rate of 98% of texts for fundamental comprehension. For this reason, the texts were administered through the Lextutor’s Vocabprofiler to establish their coverage rate (Cobb, n.d.). In all, the SAT text contained an overall count of 309 tokens, 165 word types, and 143 word families. Although the text contained one word higher than the 8,000-frequency level, genial, the word was not simplified as 98% coverage was at the 7,000 frequency level. Knowing and recognizing the first 273 tokens or 130 types at the first frequency level, provided participants with 88.35% coverage (273/309). The next frequency level gave them an additional vocabulary coverage of 4.53% (14 types), and the third frequency level brought their vocabulary coverage to 95.15% (7 types). In all, the seven frequency levels provided a coverage rate of 98.39% and the additional 1.61% (5) outstanding were pronouns (4) and genial at the twelfth frequency level.

Likewise, the Compass text was measured in the Vocabprofiler. The text consisted of an overall count of 382 tokens, 182 word types, and 151 word families. This text contained 4 words higher than the 8,000-frequency level (irritability, oneself, deity, cathartic). Similar to the first text, 98% coverage was reached at the 7,000 frequency level and for this reason the second text was not simplified. In identifying and understanding the first 292 tokens or 125 types at the first frequency level, provided participants with 76.44% coverage (292/382). The next frequency level gave them an additional vocabulary coverage of 87.96% (30 types), and the third frequency level brought their vocabulary coverage to 93.20% (20 types). Altogether, the first seven frequency levels provided participants a coverage rate of 98.43%, or a 0.04% lower coverage rate than the SAT test. An additional six words gave added coverage of 1.56%, two pronouns and the four words previously discussed.

As both texts gave a 98% coverage rate at the seventh frequency level, their readability was tested. Readabilityformulas.com (Scott, n.d.) offers a free readability text consensus profiler utilizing 8 known readability formulas to analyze characters, syllables and sentences found in text administered (e.g. the Flesch-Kincaid Ease formula, the Flesch-Kincaid Grade level). After administering both texts, their level of
readability was calculated. The SAT scored at the 10-11th grade level. Its reading level was determined as average or standard (Flesch Reading Ease 59.78). However, the database scored the Compass Reading Test at college entry level, or for 13th graders, and a reading level of difficult to read (Flesch Reading Ease 41.95). Choosing two texts at different levels provides information on their ability level.

3.2.4 Background questionnaire

A background questionnaire was administered before the tests. Participants were asked about their age, gender, education program, starting age for learning English, length of residence in an English-speaking country, and their interest in learning English in school as presented in section 3.1 of this chapter.

3.3 Procedure

All three tests were administered in a single session in pencil-and-paper format to the four groups of L2 learners respectively. The four groups were tested in their classroom during class hours and completed in four phases. There was no time limit for completion and the participants’ testing time varied from 17 minutes to 80 minutes. First, they completed the survey questionnaire. Second, the participants evaluated how well they knew 16 randomly chosen words and 4 phrases taken from the test and applied to the VKS’s self-report of vocabulary depth. Third, the participants answered the syntactic awareness test; 29 multiple choice items. Finally, they read the two reading passages and answered the 8 relating multiple choice items. The tests were marked, scored, and cross-checked for reliability of marking. After calculating the reading comprehension test, one misfitting item, an affixed word not relevant in measuring reading comprehension, was deleted from the test, question 2 in the first reading comprehension test leaving 8 out of nine questions to test comprehension.

3.4 Data Analysis Method

In this study, descriptive results of the three tests were analyzed. To provide accurate estimates of the participants’ vocabulary depth, syntactic awareness, and reading comprehension, the results were calculated accordingly to the predetermined criteria.
In evaluating the data further, frequency and mean scores were calculated to identify the fundamental tendency of the values. Additionally, the descriptive statistics of the groups’ score was calculated to measure how values vary within datasets and to show whether the datasets were clustered or dispersed around the mean value. To measure the statistical difference among groups, inferential statistics were calculated to explain differences and relationships. Graphpad Software Inc. (2017), R-Studio, and SPSS were used to calculate bivariate correlations of variables. Pearson’s correlation was also used to measure the linear relationship between the datasets of variables, the higher the value, or nearer to 1, the stronger the relationship between the data sets.

Measuring learners’ depth of vocabulary, syntactic awareness, and reading comprehension is a complex process. This chapter has outlined the study’s methodology. In answering the research questions, the next chapter presents the quantitative results of the descriptive and inferential statistics of the data acquired from the instruments and 66 participants who took part in the study.
Chapter 4 reports the results of the study in terms of the two research questions; 1) the participants´ vocabulary depth, syntactic awareness, and reading comprehension, and 2) the relationship between the depth of vocabulary, syntactic awareness, and reading comprehension. I begin by presenting the calculated sums of outcomes from the vocabulary depth, syntactic awareness, and reading comprehension test. Thereafter, the relationship between learners´ syntactic awareness, depth of vocabulary, and reading comprehension is examined.

4.1 Learners´ Knowledge

The following section presents the results pertaining to the first research question, “What is the Icelandic upper secondary learners´ 1) vocabulary depth knowledge, 2) syntactic awareness and 3) reading comprehension?”. I begin by illustrating results for learners´ vocabulary depth. Thereafter, the outcome from the learners´ syntactic awareness test is outlined as well as defining common issues shared by the groups. Finally, their result from the reading comprehension test is demonstrated. Descriptive statistics, mean scores, and standard deviation are used to describe the study´s data while inferential statistics, t-tests, are used to inference general conditions from the study´s data and determine whether the probability of observed differences between groups is credible.

4.1.1 Learners´ vocabulary depth

In order to explore participants´ depth of vocabulary knowledge of randomly chosen vocabulary items and phrases, this subsection examines results regarding the first part of research question one, “What is the Icelandic upper secondary learners´ vocabulary depth knowledge”. The examination of findings is to establish learners´ depth of knowledge of lexical items appearing in the syntactic awareness and reading comprehension test. The outcome of the vocabulary depth test is used as a marker to evaluate the relationship between the three variables tested in this study.

After administering the VKS, the groups´ productive vocabulary depth was calculated. The participants evaluated 16 vocabulary items and 4 phrases taken from the syntactic awareness and reading comprehension test on a scale of 1-5. The maximum
possible score for this self-report is 100. A score of 90-100% gives a high result, 70-89% a moderate result, 50-69% a low result, and 0-49% a very low result. Each participant’s response to the words and phrases was marked according to the VKS’s scale. On average, the results indicate a moderate depth of vocabulary knowledge with total mean score of 76.30 ($SD = 15.48$).

![Normal distribution for total participants.](image)

Further analysis of the outcomes illustrate that a wide range of distribution and variance are evident in the test scores between the groups, with a lower mean score of 65.46 (K2) ($SD = 13.89$) to a higher mean of 80.71 (T1) ($SD = 12.95$) (Table 4). The learners’ tests scores ranged from a very low 37% to a high 100%. In addition, the data demonstrates that the male participants’ mean 80.16 ($SD = 13.63$) is slightly higher than the females 70.64 ($SD = 15.83$) (Table 5).

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>76.17</td>
<td>13.46</td>
</tr>
<tr>
<td>K2</td>
<td>65.46</td>
<td>13.89</td>
</tr>
<tr>
<td>T1</td>
<td>80.71</td>
<td>12.95</td>
</tr>
<tr>
<td>T2</td>
<td>79.93</td>
<td>17.74</td>
</tr>
</tbody>
</table>
An independent-samples t-test was carried out to compare the groups’ depth of vocabulary of the items presented in the VKS (Table 6). Below, independent-samples t-tests found to have statistical significant results are discussed. Other nonsignificant outcomes are not discussed.

Table 6. T-Test Results. Variance between Groups and Gender - VKS

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>2-tailes</th>
<th>Std. Error</th>
<th>Mean Difference</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1+K2</td>
<td>2.1573</td>
<td>29</td>
<td>0.0394</td>
<td>4.964</td>
<td>10.7100</td>
<td>0.5565 - 20.8635</td>
</tr>
<tr>
<td>T1+T2</td>
<td>0.0463</td>
<td>33</td>
<td>0.9633</td>
<td>5.183</td>
<td>0.2400</td>
<td>-10.3040 - 10.7840</td>
</tr>
<tr>
<td>K1+T1</td>
<td>1.0742</td>
<td>37</td>
<td>0.2897</td>
<td>4.236</td>
<td>-4.5500</td>
<td>-13.1323 - 4.0323</td>
</tr>
<tr>
<td>K2+T2</td>
<td>2.3469</td>
<td>25</td>
<td>0.0272</td>
<td>6.166</td>
<td>-14.4700</td>
<td>-27.1685 - 1.7715</td>
</tr>
<tr>
<td>K1+T2</td>
<td>0.6825</td>
<td>30</td>
<td>0.5002</td>
<td>5.509</td>
<td>-3.7600</td>
<td>-15.0118 - 7.4918</td>
</tr>
<tr>
<td>T1+K2</td>
<td>3.2466</td>
<td>32</td>
<td>0.0027</td>
<td>4.697</td>
<td>15.2500</td>
<td>5.6820 - 24.8180</td>
</tr>
<tr>
<td>F+M</td>
<td>2.601</td>
<td>63</td>
<td>0.0116</td>
<td>3.660</td>
<td>-9.5200</td>
<td>-16.8347 - 2.2053</td>
</tr>
</tbody>
</table>

Three group differences and the difference between the genders were found statistically significant. The strongest statistical significant difference was found in the VKS scores for K2 (M = 65.46, SD = 13.89) and T1 (M = 80.71, SD = 12.95), conditions t (32) = 3.25, p = 0.003. However, the magnitude of the difference in the means was moderate (eta squared = 0.031). These results suggest that participants’ vocabulary depth explains 3.1% of variance in depth of knowledge of test items.

The next highest significant difference is evident in the VKS scores for K2 (M = 64.46, SD = 13.89) and T2 (M = 79.93, SD = 17.74) conditions t (25) = 2.35, p = 0.03, and the magnitude of the difference in the means was moderate (eta squared = 0.04). These results suggest that depth of knowledge explains 4% of variance in vocabulary depth between the two groups.
The third group difference found to be significant is apparent in the VKS scores for K1 ($M = 76.17, SD = 13.46$) and K2 ($M = 65.46, SD = 13.89$) conditions $t (29) = 2.16, p = 0.039$, and the magnitude of the difference in the means was moderate (eta squared = 0.033). These results suggest that low depth of vocabulary knowledge explains 3.3% of variance in the two groups.

Lastly, a t-test was conducted to compare the females and males depth of vocabulary. There was a significant difference in the VKS scores for the females ($M = 70.64, SD = 15.83$) and males ($M = 80.16, SD = 13.63$) conditions $t (63) = 2.60, p = 0.012$, but the magnitude of the difference in the means was small (eta squared = 0.016). These results suggest that gender explains 1.6% of variance in vocabulary depth in the females and males.

I have presented the results of the groups’ depth of knowledge. Interestingly, the significant results obtained from the two-sample t-tests establish that vocabulary depth presented a statistically significant difference between the group (T1) procuring a higher mean score than groups attaining lower scores (T2, K1, K2) or a magnitude of moderate difference between groups (T1/K2, T2/K2, K1/K2) and 3.1-4% variance in vocabulary depth. A smaller moderate difference was obtained between genders, explaining a lower variance of 1.6% in vocabulary depth in the females and males. In all, the range of results between the groups suggests that low vocabulary knowledge scores and individual differences on the VKS affected learners’ comprehension of vocabulary items found in the syntactic and reading comprehension test. These individual differences may include different teaching methods, learner characteristics, language aptitude, beliefs, as well as classroom and school diversity at the upper secondary level may all affect the groups’ results.

### 4.1.2 Learners’ syntactic awareness

I will now examine the results concerning the second half of the first research question, “What is the Icelandic upper secondary learners´ syntactic awareness”. As the syntactic awareness test consists of five instruments, each section of the test is descriptively analyzed and group differences are explored before moving to the next section. However, I begin by presenting the groups’ total scores.
The groups’ overall results from the syntactic awareness test were calculated. The total group (K1+K2+T1+T2) mean was 21.09 (SD = 2.71) (Table 7). A score of 90-100% gives a high result, 70-89% a moderate result, 50-69% a low result, and 0-49% a very low result. In general, the results indicate moderate syntactic awareness with an average score of 73%.

Table 7. Results from the Syntactic Awareness Test

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>All 4 groups</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grammar Proficiency (ESL)</td>
<td>9.33</td>
<td>8.46</td>
<td>9.43</td>
<td>8.79</td>
<td>9.08</td>
<td>8.82</td>
<td>9.24</td>
</tr>
<tr>
<td>Sentence Skills I (Evaluation)</td>
<td>2.72</td>
<td>2.54</td>
<td>2.76</td>
<td>2.79</td>
<td>2.71</td>
<td>2.71</td>
<td>2.68</td>
</tr>
<tr>
<td>Sentence Skill II (Reduction)</td>
<td>3.89</td>
<td>3.00</td>
<td>4.19</td>
<td>4.21</td>
<td>3.88</td>
<td>3.64</td>
<td>4.05</td>
</tr>
<tr>
<td>Relative Pronoun Use</td>
<td>2.89</td>
<td>2.15</td>
<td>2.95</td>
<td>2.43</td>
<td>2.67</td>
<td>2.50</td>
<td>2.76</td>
</tr>
<tr>
<td>Relative Clauses (Evaluation)</td>
<td>2.44</td>
<td>2.85</td>
<td>3.24</td>
<td>2.36</td>
<td>2.76</td>
<td>2.71</td>
<td>2.78</td>
</tr>
<tr>
<td>Mean</td>
<td>21.28</td>
<td>19.00</td>
<td>22.57</td>
<td>20.57</td>
<td>21.09</td>
<td>20.39</td>
<td>21.51</td>
</tr>
<tr>
<td>SD</td>
<td>2.74</td>
<td>2.65</td>
<td>2.67</td>
<td>2.74</td>
<td>2.71</td>
<td>2.69</td>
<td>2.82</td>
</tr>
<tr>
<td>Average %</td>
<td>73%</td>
<td>66%</td>
<td>78%</td>
<td>71%</td>
<td>73%</td>
<td>70%</td>
<td>74%</td>
</tr>
</tbody>
</table>

Total group mean scores range from a lower score of 19.00 (K2) (SD = 2.65) to a higher score of 22.57 (SD = 2.67) (T1). The syntactic test measured moderate as the mean of the four groups calculates 21.09 out of a maximum possible score of 29, or an average scoring of 72.7%. However, a considerable range of distribution and variance characterize the results, ranging from a score of 10 (34%) to 27 (93%). K2 received the lowest score of 66%, while T1 procured the highest of 78%. Of the 66 participants, 8 participants obtained scores ranging from 10 to 15, 17 scored from 16 to 20, 37 scored from 21 to 25, and the remaining 4 attained scores ranging from 26 to 27. The male participants scored higher (21.51) than the female participants (20.39) on 4/5 tests.

An independent-samples t-test was carried out to compare the four groups’ syntactic awareness. Three group differences were found statistically significant. Other differences showed non-statistically significant results. For this reason, their outcomes are not discussed.
There was a highly significant difference in the syntactic awareness test for K2 ($M = 19.00, SD = 2.65$) and T1 ($M = 22.57, SD = 2.67$) conditions $t (32) = 3.80, p = 0.001$. The magnitude of the difference in the means was moderate (eta squared = 0.031), with group difference explaining 3.1% of the variance in the syntactic awareness test results.

Another independent-samples t-test was carried out to compare K1 and K2’s syntactic awareness. There was a significant difference in the syntactic awareness test for K1 ($M = 21.28, SD = 2.74$) and K2 ($M = 19.00, SD = 2.65$) conditions $t (29) = 2.32, p = 0.028$. The magnitude of the difference in the means was moderate (eta squared = 0.034), with group difference explaining 3.4% of the variance in the syntactic awareness test results.

Lastly, an independent-samples t-test was carried out to compare T1 and T2’s syntactic awareness. There was a significant difference in the syntactic awareness test for T1 ($M = 22.57, SD = 2.67$) and T2 ($M = 20.57, SD = 2.74$) conditions $t (33) = 2.15, p = 0.039$. The magnitude of the difference in the means was moderate (eta squared = 0.03), with group difference explaining 3.9% of the variance in the syntactic awareness test results.

Overall, these results suggest that low syntactic awareness and individual differences affect comprehension of grammatical and syntactical items in the test. Of the four groups, K2 received the lowest mean (19.00) of the four groups and T1 acquired the highest mean (22.57). Implying how low syntactic awareness affects participants’ comprehension of grammatical and syntactical items which construe phrases, sentences, and passages in the test. In like manner, the results demonstrate
participants´ individual differences affecting their acquisition of grammatical and syntactic rules, and as a result, influence their outcomes on the test. The following subsection will look further into identifying issues relating to the learners´ low proficiency scores.

4.1.2.1 Grammar proficiency

The first section measured participants´ grammar proficiency and is a sample of an Accuplacer test specifically prepared to analyze ESL grammatical knowledge. It consisted of a cloze test, or a gap-filling exercise, where participants are given suitable alternatives from which to choose. In general, the groups scored a total mean of 9.00 (SD=1.49) out of a possible score of 10 (Table 9).

Table 9. Grammar Proficiency (ESL)

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (10)</td>
<td>9.33</td>
<td>8.46</td>
<td>9.43</td>
<td>8.79</td>
<td>9.00</td>
<td>8.82</td>
<td>9.24</td>
</tr>
<tr>
<td>SD</td>
<td>1.12</td>
<td>2.11</td>
<td>0.75</td>
<td>1.93</td>
<td>1.49</td>
<td>1.69</td>
<td>1.34</td>
</tr>
</tbody>
</table>

*() Maximum possible score

The obtained scores varied from a low outcome of 4 to a 10 out of 10. 37 attained a score of 10, 15 a score of 9, 8 obtained an 8, 2 scored a 7, and the four remaining scored a 5 (2) and 4 (2). T1 (M = 9.43) (SD=0.75) and K1 (M = 9.33) (SD = 1.12) scored highest and K2 (M = 8.46) (SD = 2.11) the lowest. The males (M = 9.24) (SD = 1.34) scored 4.2% higher than the females (M = 8.82) (SD = 1.69) on this portion of the test.

Common issues were identified in the grammar proficiency section (Table 10). Four out of 10 test components rendered more challenging for the participants than others. This portion of the test asked participants to choose the word or phrase making a sentence grammatically correct. In general, the participants´ scores demonstrate adequate grammar proficiency.
Table 10. Results for Grammar Questions

<table>
<thead>
<tr>
<th>Questions</th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 (18)</td>
<td>100 (13)</td>
<td>100 (21)</td>
<td>100 (14)</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>100 (18)</td>
<td>77 (10)</td>
<td>100 (21)</td>
<td>93 (13)</td>
<td>93</td>
</tr>
<tr>
<td>3</td>
<td>78 (14)</td>
<td>77 (10)</td>
<td>100 (21)</td>
<td>86 (12)</td>
<td>85</td>
</tr>
<tr>
<td>4</td>
<td>100 (18)</td>
<td>100 (13)</td>
<td>90 (19)</td>
<td>100 (14)</td>
<td>98</td>
</tr>
<tr>
<td>5</td>
<td>94 (17)</td>
<td>77 (10)</td>
<td>95 (20)</td>
<td>71 (10)</td>
<td>84</td>
</tr>
<tr>
<td>6</td>
<td>100 (18)</td>
<td>100 (13)</td>
<td>100 (21)</td>
<td>100 (14)</td>
<td>100</td>
</tr>
<tr>
<td>7</td>
<td>83 (15)</td>
<td>69 (9)</td>
<td>86 (18)</td>
<td>86 (12)</td>
<td>81</td>
</tr>
<tr>
<td>8</td>
<td>94 (17)</td>
<td>85 (11)</td>
<td>86 (18)</td>
<td>86 (12)</td>
<td>88</td>
</tr>
<tr>
<td>9</td>
<td>89 (16)</td>
<td>85 (11)</td>
<td>86 (18)</td>
<td>71 (10)</td>
<td>83</td>
</tr>
<tr>
<td>10</td>
<td>94 (17)</td>
<td>77 (10)</td>
<td>100 (21)</td>
<td>86 (12)</td>
<td>89</td>
</tr>
<tr>
<td>%</td>
<td>93.3</td>
<td>84.6</td>
<td>94.3</td>
<td>87.9</td>
<td>90</td>
</tr>
<tr>
<td>N</td>
<td>18</td>
<td>13</td>
<td>21</td>
<td>14</td>
<td>66</td>
</tr>
</tbody>
</table>

However, the most challenging questions for the groups related to the selection of the correct tense for verbs in questions 3 (the 3rd person singular form *freezes*), 5 (the infinitive form of *communicate*), and 7 (the past particle form of *discover, for having discovered*). 57/66 chose *freezes* correctly while 54/66 selected *for having discovered* correctly. The next challenging sentence, in question 5, was a compounded sentence where participants needed to identify the correct grammatical form of *dedicate*, or its nominalized form *dedication*. 58/66 selected the nominalized form correctly. Question 9 was most trying question was a complex sentence beginning with the subordinating conjunction *when*.

### 4.1.2.2 Sentence skills I

The second section measured participants’ syntactic skills in evaluating a correct sentence. Out of a maximum possible score of 5, the groups scored a low mean of 2.70 (SD = 0.11) (Table 11).

Table 11. Sentence Skills I

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (5)</td>
<td>2.72</td>
<td>2.54</td>
<td>2.76</td>
<td>2.79</td>
<td>2.70</td>
<td>2.71</td>
<td>2.68</td>
</tr>
<tr>
<td>SD</td>
<td>0.75</td>
<td>0.97</td>
<td>1.22</td>
<td>1.25</td>
<td>0.11</td>
<td>0.98</td>
<td>1.11</td>
</tr>
</tbody>
</table>

*() Maximum possible score
The obtained scores varied from a low outcome of 0 to a 5/5. 2 attained a score of 5, 12 a score of 4, 27 obtained a 3, 16 scored a 2, 8 a score of 1, and the one remaining scored a 0. T2 \((M = 2.79) (SD = 1.25)\) scored highest and K2 \((2.54) (SD = 0.97)\) the lowest. In this section the females \((M = 2.71)\) scored a slightly higher score than the males \((M = 2.68)\).

Two sentence components proved to be significantly more problematic for the groups, demonstrated in Table 12.

Table 12. Sentence Skills

<table>
<thead>
<tr>
<th>Questions</th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11 (2)</td>
<td>31 (4)</td>
<td>43 (9)</td>
<td>64 (9)</td>
<td>37.25</td>
</tr>
<tr>
<td>2</td>
<td>96 (17)</td>
<td>85 (11)</td>
<td>76 (16)</td>
<td>93 (13)</td>
<td>87.5</td>
</tr>
<tr>
<td>3</td>
<td>67 (12)</td>
<td>69 (9)</td>
<td>76 (16)</td>
<td>50 (7)</td>
<td>65.5</td>
</tr>
<tr>
<td>4</td>
<td>28 (5)</td>
<td>38 (5)</td>
<td>14 (3)</td>
<td>21 (3)</td>
<td>25.3</td>
</tr>
<tr>
<td>5</td>
<td>72 (13)</td>
<td>31 (4)</td>
<td>67 (14)</td>
<td>50 (7)</td>
<td>55</td>
</tr>
<tr>
<td>%</td>
<td>54.8</td>
<td>50.8</td>
<td>55.2</td>
<td>87.9</td>
<td>55</td>
</tr>
<tr>
<td>N</td>
<td>18</td>
<td>13</td>
<td>21</td>
<td>14</td>
<td>66</td>
</tr>
</tbody>
</table>

The first sentence, in question 1, concerned a grammatical error where an incorrect verb phrase was used. Only 24 out of 66 answered is a hobby instead of its incorrect form being a hobby that is. Markedly, the most troublesome issue, question 4, related to a complex sentence with an embedded phrase, A snake’s shedding its skin, up to eight times a year, is part of a natural process. This component measured participants´ knowledge of pronoun and subject-verb agreement. Only 17 out of 66 answered this question correctly. T2 demonstrated difficulty in evaluating whether the relative clause which is an activity was grammatically correct in question 3 opposed to the correct answer is an activity.

4.1.2.3 Sentence skills II

The third section, concerned sentence reduction and coordination. Each question illustrated two sentences and offered 4 multiple-choice answers to each question.
Table 13. Sentence Skills II (Reduction)

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (5)</td>
<td>3.89</td>
<td>3.00</td>
<td>4.19</td>
<td>4.21</td>
<td>3.88</td>
<td>3.64</td>
<td>4.05</td>
</tr>
<tr>
<td>SD</td>
<td>1.08</td>
<td>1.15</td>
<td>0.92</td>
<td>1.25</td>
<td>1.16</td>
<td>1.10</td>
<td>1.20</td>
</tr>
</tbody>
</table>

*() Maximum possible score

The groups scored higher on this sentence skills portion of the test with a group mean of 3.88 (SD = 1.16) (Table 13). T1 (M = 4.19) (SD = 0.92) and T2 (M = 4.21) (SD = 1.25) scored highest and K2 (M = 3.00) (SD = 1.15) the lowest. The male participants (M = 4.05) (SD = 1.20) scored higher in reducing sentences than the female participants (M = 3.64) (SD = 1.10). The scores obtained in this section varied from 1 to 5/5. 75% of participants demonstrated high or moderately high skills in sentence reduction and coordination of compounded sentences as 22 individuals scored a 4 and 28 a score of 5. However, 25% of less skilled participants procured scores of 3 (N = 8), 2 (N = 7), and 1 (N = 1).

Two questions rendered more difficult than others to combine (Table 14).

Table 14. Sentence Skills II

<table>
<thead>
<tr>
<th>Questions</th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>83 (15)</td>
<td>77 (10)</td>
<td>86 (18)</td>
<td>93 (13)</td>
<td>85</td>
</tr>
<tr>
<td>7</td>
<td>94 (17)</td>
<td>85 (11)</td>
<td>100 (21)</td>
<td>86 (12)</td>
<td>91</td>
</tr>
<tr>
<td>8</td>
<td>83 (15)</td>
<td>77 (10)</td>
<td>81 (17)</td>
<td>93 (13)</td>
<td>84</td>
</tr>
<tr>
<td>9</td>
<td>67 (12)</td>
<td>31 (4)</td>
<td>76 (16)</td>
<td>79 (11)</td>
<td>63</td>
</tr>
<tr>
<td>10</td>
<td>61 (11)</td>
<td>31 (4)</td>
<td>76 (16)</td>
<td>71 (10)</td>
<td>62</td>
</tr>
</tbody>
</table>

| %           | 77.8 | 60.0 | 83.8 | 84.2 | 77.6 |
| N           | 18   | 13   | 21   | 14   | 66   |

Question 9 involved selecting the correct compounded sentence. 44/66 chose the correct answer which involved reducing the first sentence to a gerund phrase and placing it in a frontal position where it functioned as an opener, Being pack animals, wolves are rarely spotted alone. Additionally, question 10 proved problematic as only 41/66 selected the nominalized form of the main verb exposure in the first sentence to be comprehensive exposure instead of the frequently chosen item comprehensive exposurement. K2 struggled with these two questions as only a little over 31%, or 4 participants, chose the correct answer.
4.1.2.4 Relative pronoun use

The fourth section of the test measured participants’ knowledge of pronoun use in relative clauses. This section offered a cloze test.

Table 15. Relative Pronoun Use

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (4)</td>
<td>2.89</td>
<td>2.15</td>
<td>2.95</td>
<td>2.43</td>
<td>2.67</td>
<td>2.50</td>
<td>2.76</td>
</tr>
<tr>
<td>SD</td>
<td>0.96</td>
<td>0.90</td>
<td>0.86</td>
<td>1.16</td>
<td>1.00</td>
<td>0.96</td>
<td>1.01</td>
</tr>
</tbody>
</table>

*(*) Maximum possible score

Participants were presented with a gap-filling exercise where the relative pronouns had been removed and they were given suitable alternatives from which to choose. In this exercise, the maximum possible score was 4. The total group mean was 2.67 (SD = 1.00) and T1 (M = 2.95) (SD = 0.86) scored the highest score compared to the other groups, the next highest being K1´s score (M = 2.89) (SD = 0.96) (Table 15). Thereafter, T2 (M = 2.43) (SD = 1.16) and K2 (M = 2.15) (SD = 0.90) follow with lower scores than the groups’ mean score 2.67. The males´ mean score (M = 2.76) (SD = 1.01) is once again higher than the females (M = 2.50) (SD = 0.96). The scores obtained in this section varied from 1 to 4/4. 23% chose the correct relative pronoun for all language items, 36% of participants selected 75% correct. However, 41% obtained scores of 2 (N = 17) and 1 (N = 10).

The most difficult language item for the participants to determine in the exercise was the relative pronoun whose in question 12. 25/66 chose the correct relative pronoun or 38% as illustrated in Table 16.

Table 16. Relative Pronoun Use

<table>
<thead>
<tr>
<th>Questions</th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>78 (14)</td>
<td>77 (10)</td>
<td>86 (18)</td>
<td>50 (7)</td>
<td>73</td>
</tr>
<tr>
<td>12</td>
<td>44 (8)</td>
<td>15 (2)</td>
<td>43 (9)</td>
<td>50 (7)</td>
<td>38</td>
</tr>
<tr>
<td>13</td>
<td>100 (18)</td>
<td>62 (8)</td>
<td>81 (17)</td>
<td>64 (9)</td>
<td>77</td>
</tr>
<tr>
<td>14</td>
<td>67 (12)</td>
<td>62 (8)</td>
<td>86 (18)</td>
<td>79 (11)</td>
<td>74</td>
</tr>
<tr>
<td>%</td>
<td>72</td>
<td>54</td>
<td>74</td>
<td>61</td>
<td>67</td>
</tr>
<tr>
<td>N</td>
<td>18</td>
<td>13</td>
<td>21</td>
<td>14</td>
<td>66</td>
</tr>
</tbody>
</table>

Noticeably, K2 had considerable difficulty in determining the correct answer for this sentence item. Although many of the groups were able to choose whose correctly in the
first question, they found it more difficult in a sentence where the relative clause was center embedded in the sentence. Such embedding interrupts the connection between the subject and verb. The females scored a lower score than the males in this section of the test.

4.1.2.5 Relative pronoun evaluation

The fifth and final section of the syntactic test measured participants’ knowledge of relative clauses. In this test, participants determined whether a relative pronoun was needed or could be omitted from the sentence without the sentence becoming grammatically incorrect.

Table 17. Relative Pronoun Evaluation

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (5)</td>
<td>2.44</td>
<td>2.85</td>
<td>3.24</td>
<td>2.36</td>
<td>2.76</td>
<td>2.71</td>
<td>2.78</td>
</tr>
<tr>
<td>SD</td>
<td>0.70</td>
<td>0.80</td>
<td>0.83</td>
<td>0.63</td>
<td>0.82</td>
<td>1.01</td>
<td>0.67</td>
</tr>
</tbody>
</table>

*() Maximum possible score

The maximum possible score in the test was 5. The total group mean was 2.76 (SD = 0.82). T1 surpassed the other groups with a mean of 3.24 (SD = 0.83) compared to K2 (M = 2.85) (SD = 0.80), K1 (M = 2.44) (SD = 0.70), and particularly T2 (M = 2.36) (SD = 0.63). The females mean score of 2.71 (SD = 1.01) was slightly lower than the males (M = 2.78) (SD = 0.67) in this test. The scores from this section varied from a low 1 to a high 5 out of 5. 85% of the participants scored a 3 (N = 30) or a 2 (N = 24) on this part of the syntactic test whereas only 3% procured a score of 5 (N = 2) and 12% obtained a score of 4.

The most problematic sentence items in this section were questions 15 and 16.

Table 18. Relative Pronoun Evaluation

<table>
<thead>
<tr>
<th>Questions</th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
<th>Groups’ Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>11 (2)</td>
<td>45 (6)</td>
<td>14 (3)</td>
<td>0 (0)</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>17 (3)</td>
<td>8 (1)</td>
<td>38 (8)</td>
<td>21 (3)</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>89 (16)</td>
<td>100 (13)</td>
<td>90 (19)</td>
<td>93 (13)</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>39 (7)</td>
<td>38 (5)</td>
<td>81 (17)</td>
<td>29 (4)</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>89 (16)</td>
<td>92 (12)</td>
<td>100 (21)</td>
<td>93 (13)</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>49</td>
<td>57</td>
<td>65</td>
<td>47</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>18</td>
<td>13</td>
<td>21</td>
<td>14</td>
<td>66</td>
<td></td>
</tr>
</tbody>
</table>
Question 15 regarded a non-defining relative clause where the relative pronoun *which* could be omitted. 18% chose correctly to omit the relative pronoun. Another system is *the complaints procedure which members of the public can initiate against police officers*. However, only 21% chose the correct answer to question 16. Conversely, question 16 offered a sentence with a defining relative clause where the relative pronoun *that* introduced additional information relative to the understanding of the sentence’s meaning, *The report that was eventually submitted by the researchers was not properly costed and would have led to financial problems if implemented.*

The significant results obtained from the independent t-tests establish that syntactic awareness presented a statistically significant difference between the group (T1) procuring a higher mean score than groups attaining lower scores (T2, K1, K2) or a magnitude of moderate difference between groups (T1/K2, T2/K2, K1/K2) and 3.1-3.9% variance in syntactic awareness. Broad ranging proficiency suggests that low syntactic awareness affected the groups’ comprehension of lexical items and sequences found in the syntactic and reading comprehension test. Other factors such as individual differences account for variation between groups and/or participants.

As illustrated in this section, various syntactical structures were more problematic than others for the groups. Examination of participants’ syntactic awareness revealed common issues in their evaluation and use of selected grammatical, syntactic, and linguistic items. The most problematic issue for the participants in the grammar proficiency test was selecting the correct 1) tense for verbs, 2) nominalized forms of verbs, and 3) subordinating conjunctions. Problematic items in sentence skills related to their knowledge of 1) correct verb phrases, 2) pronoun and subject-verb agreement, 3) complex sentences with embedded phrases, and 4) sentence reduction with geruding and nominalization. Their overall knowledge of relative pronoun use and relative clauses was low. The participants seemed to struggle with relative clauses that are center embedded in sentences. Distinguishing between non-defining and defining relative clauses where the relative pronoun *that* introduces additional information was inadequate. However, knowledge of their function is imperative for comprehension of sentences’ meaning since they often appear in informational texts.
4.1.3 Learners’ reading comprehension

The following section presents the results regarding the last part of the first research question, “What is the Icelandic upper secondary learners’ reading comprehension”. The test consisted of two passages and eight questions. I begin by presenting the groups’ total scores.

To evaluate the participants reading comprehension, results of the comprehension tests were calculated. Two informational tests for general readers were presented, one on money managing (R1) and another on “A Grieving Process” (R2). Both tests gave a total score of 8, four questions in R1 and four in R2. A score of 90-100% gives a high result, 70-89% a moderate result, 50-69% a low result, and 0-49% a very low result. In all, the groups scored a mean score of 3.53 (SD = 2.25), ranging from a low mean score of 2.54 (SD = 2.06) (K2) to the highest mean score of 4.62 (SD = 2.38) (T1) (See Table 19). In general, the results indicate a very low score of 42%. A large range of distribution and variance was found between the groups as scores ranged from 0% (0/8) to 100% (8/8). Results from R1 gave marginally higher scores than R2, or \( M = 1.85 \) in total for all four groups opposed to \( M = 1.52 \) (R1). T1 scored the highest \( M = 4.38 \) (55%) on both tests, R1 \( M = 2.24 \) and R2 \( M = 2.14 \), while K2 scored the lowest \( M = 2.54 \) (32%), R1 \( M = 1.46 \) and R2 \( M = 1.08 \). The males mean 3.57 (SD = 2.33) was slightly higher than the females 3.46 (SD = 2.18).

An independent-samples t-test was carried out to compare the four groups’ reading comprehension. A statistically significant difference was found between three group comparisons.

<table>
<thead>
<tr>
<th>Variable</th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading 1</td>
<td>1.67</td>
<td>1.46</td>
<td>2.24</td>
<td>1.86</td>
<td>1.85</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Reading 2</td>
<td>1.56</td>
<td>1.08</td>
<td>2.14</td>
<td>0.93</td>
<td>1.52</td>
<td>1.46</td>
<td>1.57</td>
</tr>
<tr>
<td>R1+R2 M</td>
<td>3.22</td>
<td>2.54</td>
<td>4.38</td>
<td>2.79</td>
<td>3.36</td>
<td>3.46</td>
<td>3.57</td>
</tr>
<tr>
<td>SD</td>
<td>1.80</td>
<td>2.15</td>
<td>2.38</td>
<td>2.79</td>
<td>2.20</td>
<td>2.18</td>
<td>2.33</td>
</tr>
<tr>
<td>Average %</td>
<td>40%</td>
<td>32%</td>
<td>55%</td>
<td>35%</td>
<td>42%</td>
<td>43%</td>
<td>45%</td>
</tr>
</tbody>
</table>

*Maximum Possible Score R1=4, R2=4, R1+R2=8
Table 20. T-Test results. Variance between Groups and Gender –
Reading Comprehension Test

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>2-tailes</th>
<th>Std. Error</th>
<th>Mean Difference</th>
<th>Difference</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1+K2</td>
<td>0.661</td>
<td>29</td>
<td>0.5138</td>
<td>0.696</td>
<td>0.4600</td>
<td>-0.9632</td>
<td>1.8832</td>
<td></td>
</tr>
<tr>
<td>T1+T2</td>
<td>1.9788</td>
<td>33</td>
<td>0.0562</td>
<td>0.783</td>
<td>1.5500</td>
<td>-0.0436</td>
<td>3.1436</td>
<td></td>
</tr>
<tr>
<td>K1+T1</td>
<td>2.3643</td>
<td>37</td>
<td>0.0234</td>
<td>0.685</td>
<td>-1.62</td>
<td>-2.1765</td>
<td>1.1165</td>
<td></td>
</tr>
<tr>
<td>K2+T2</td>
<td>0.6629</td>
<td>25</td>
<td>0.5134</td>
<td>0.799</td>
<td>-0.5300</td>
<td>-1.4753</td>
<td>1.3353</td>
<td></td>
</tr>
<tr>
<td>K1+T2</td>
<td>0.1017</td>
<td>30</td>
<td>0.9197</td>
<td>0.688</td>
<td>-0.0700</td>
<td>-1.2447</td>
<td>1.0247</td>
<td></td>
</tr>
<tr>
<td>T1+K2</td>
<td>2.6018</td>
<td>32</td>
<td>0.0139</td>
<td>0.799</td>
<td>2.0800</td>
<td>0.4516</td>
<td>3.7084</td>
<td></td>
</tr>
<tr>
<td>F+M</td>
<td>0.1937</td>
<td>63</td>
<td>0.8470</td>
<td>0.568</td>
<td>-0.1100</td>
<td>-1.2447</td>
<td>1.0247</td>
<td></td>
</tr>
</tbody>
</table>

There was significant difference in the reading comprehension test for T1 ($M = 4.62, SD = 2.38$) and K2 ($M = 2.54, SD = 2.06$) conditions $t (30) = 2.60, p = 0.01$. The magnitude of the difference in the means was moderate (eta squared = 0.031), with group difference explaining 3.1% of the variance in the reading comprehension test results.

Another independent-samples t-test conducted to compare results from the reading comprehension test showed a significant difference for T1 ($M = 4.62, SD = 2.38$) and K1 ($M = 3.00, SD = 1.80$) conditions $t (37) = 2.36, p = 0.02$. The magnitude of the difference in the means was moderate (eta squared = 0.027), with group difference explaining 2.7% of the variance in the reading comprehension test results.

These results suggest that low depth of vocabulary and syntactic awareness affected participants’ semantic and syntactic processing of sentences and passages in the test. K2 received the lowest mean 2.54 of the four groups while T1 acquired the highest mean of 4.62. This discrepancy may be due to their individual differences and diversity of educational institutions they have previously attended. Implying how low depth of vocabulary, syntactic awareness, semantic and syntactic processing affects comprehension of the texts in the test. Other independent-samples t-tests were conducted and found to have non-significant results. The following subsection gives a detailed description of issues relating to the learners’ low reading comprehension scores.
4.1.3.1 **Reading comprehension skills**

The eight questions measured reading comprehension skills in inferring, interpreting, and evaluating the texts. Three out of eight multiple questions asked participants to infer the main idea of the passage or paragraph, questions 1 in R1 and questions 1 and 2 in R2 (Appendix V). Two out of eight examined how well participants could extract information from the texts and infer the correct definition to the word *economy* in R1 and *cathartic* in R2 based on their overall comprehension of new information. Question 4 in R1 requested participants to evaluate for whom the text was written, its audience. Finally, one question from each questionnaire sought to identify their skills in interpreting the information given in sentences, question 2 in R1 and 4 in R2.

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>T1</th>
<th>T2</th>
<th>Total</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inferring Main Idea</td>
<td>41%</td>
<td>38%</td>
<td>59%</td>
<td>26%</td>
<td>41%</td>
<td>44%</td>
<td>39%</td>
</tr>
<tr>
<td>Finding Definition</td>
<td>42%</td>
<td>32%</td>
<td>52%</td>
<td>39%</td>
<td>42%</td>
<td>38%</td>
<td>43%</td>
</tr>
<tr>
<td>Interpreting Information</td>
<td>39%</td>
<td>59%</td>
<td>57%</td>
<td>39%</td>
<td>39%</td>
<td>50%</td>
<td>43%</td>
</tr>
<tr>
<td>Evaluating Audience</td>
<td>39%</td>
<td>9%</td>
<td>43%</td>
<td>43%</td>
<td>33%</td>
<td>32%</td>
<td>37%</td>
</tr>
<tr>
<td>Total average for Groups</td>
<td>40%</td>
<td>32%</td>
<td>55%</td>
<td>35%</td>
<td>42%</td>
<td>43%</td>
<td>45%</td>
</tr>
</tbody>
</table>

The results from the reading comprehension test demonstrate low reading comprehension skills in inferring, interpreting, and evaluating information from the two texts. On average, 41% of the participants inferred the main idea correctly. T1 obtained the highest average of 59% and T2 the lowest of 26%. Inferring the definition of the two words used in each text rendered difficult for the groups, or 41% chose the correct definition. Once again T1 acquired the highest average of 52% and K2 the lowest 32%. The groups procured a higher average in interpreting information from two separate sentences found in the texts. K2 obtained the highest average of 59% while K1 and T2 both acquired an average of 39%. Lastly, a strikingly low 33% evaluated the correct audience for the informational text on money management. Two groups, T1 and T2, attained an average of 43%, K1 39%, and K2 the lowest average of 9%. These outcomes demonstrate a range of individual variation in the participants’ reading skills and ability to infer, evaluate, and interpret propositions at text level.
4.2 Relationship between Vocabulary Depth, Syntactic awareness, and Reading Comprehension

This final section of Chapter 4 presents results pertaining to the second research question, “Is there a relationship between the Icelandic upper secondary school learners´ depth of vocabulary, syntactic awareness, and reading comprehension?” Descriptive statistics, average scores, and Pearson correlation are applied to describe the three variables data. Graphical representations and bivariate scatterplots are used to illustrate the degree and level of significance of the relationship between variables.

To assess the relationship between the groups´ performance on the VKS, syntactic awareness test (SAT), and reading comprehension test (RCT), correlations were measured to describe interrelations between variables. Means and standard derivations for the variables and their bivariate correlations were calculated in SPSS.

Pearson correlation coefficients were measured to examine the correlation between the three tests; VKS, SAT, and RCT (Table 22). The VKS and syntactic awareness correlated significantly, with a strong correlation $r = .80$. However, the VKS correlated only weakly with reading comprehension $r = .39$. At the same time, the syntactic awareness test and reading comprehension test correlated significantly, with a moderate correlation $r = .58$. This shows that a participant scoring high on one test component is likely to score high on another component as well.

Table 22. Intercorrelations between Measures

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 VKS</td>
<td>-</td>
<td>.796**</td>
<td>.391**</td>
</tr>
<tr>
<td>2 Syntactic Awareness Test (SAT)</td>
<td>-</td>
<td>.588**</td>
<td>-</td>
</tr>
<tr>
<td>3 Reading Comprehension Test (RCT)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
Figure 6. Pearson correlation between VKS and Syntactic Awareness Test

Figure 7. Syntactic Awareness and Reading Comprehension Test

Figure 8. VKS and Reading Comprehension Test
Markedly, the interrelationship measured between the SAT and RCT provides support for identifying syntactic variables as having a moderate relationship with reading comprehension. Broadly speaking, the correlations between VKS and SAT on the one hand and SAT and RCT on the other indicate a moderate to strong relationship between coefficients. The scatterplots illustrate a definite statistically significant relationship between the three sets of variables measured in this section. Although this suggests that participants will score similar on all components, the results show a less definite or weak correlation between VKS and RCT. This means that SAT rather than VKS facilitates success on the RCT. However, as with other results in this thesis, there is great variation suggesting group and other relating factors affecting outcomes as well.

4.2.1 Groups´ mean scores from VKS, SAT, and RCT tests

The following bar charts indicate the frequency of the collected data from the three tests. Figures 9, 10, and 11 present a graphical representation of data by comparing each group’s mean scores from the VKS, syntactic awareness, and reading comprehension tests. A parallel pattern is found in the data between the groups’ depth of vocabulary knowledge, syntactic proficiency, and reading comprehension. A linear line follows the groups’ mean scores on all three tests. The group (T1) scoring highest on the VKS and syntactic awareness test, acquired the highest score on the reading comprehension test. As illustrated, T1 scored slightly higher on the VKS than the other groups. Scores from the syntactic test demonstrate an increase in the difference between T1 and the other groups. Finally, the reading comprehension scores show a greater difference between T1’s reading comprehension in comparison to T2, K1, and K2.

The most remarkable result to emerge from the data, and mentioned in a previous section, was the great variation between the groups. Two groups show consistently low scores on the tests. K2’s scores present a downward movement in vocabulary depth, syntactic awareness, and reading comprehension. They scored consistently lower than the groups’ mean on all three tests. Notably, there is a slight decrease in T2’s syntactic awareness opposed to their vocabulary knowledge and their lack of proficiency becomes more apparent in the downswing in their reading comprehension (Figure 11). At the same time, T1’s syntactic awareness drops less than other groups when all three
scores are compared. In addition, the graphs show how the genders difference slightly levels off in their comprehension ability.

Figure 9. Average scores for VKS

Figure 10. Average scores for the syntactic awareness test
Closer inspection of the relationships between variables across the groups revealed a great variation in the correlation between the groups’ vocabulary depth (VKS), syntactic awareness (SAT), and reading comprehension (RCT).

Table 23. Correlation between Tests

<table>
<thead>
<tr>
<th>Tests</th>
<th>VKS</th>
<th>SAT</th>
<th>RCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>VKS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAT</td>
<td>.868**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCT</td>
<td>.515*</td>
<td>.478*</td>
<td></td>
</tr>
<tr>
<td>VKS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAT</td>
<td>.767**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCT</td>
<td>.252</td>
<td>.698**</td>
<td></td>
</tr>
<tr>
<td>VKS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAT</td>
<td>.624**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCT</td>
<td>.373</td>
<td>.578**</td>
<td></td>
</tr>
<tr>
<td>VKS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAT</td>
<td>.873**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCT</td>
<td>.281</td>
<td>.474</td>
<td></td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.01 level (2-tailed)
The correlations between measures are worth mentioning because they demonstrate uniformly positive correlations between coefficients. In particular, a very strong correlation between the VKS and SAT for groups K1 \((r = .87)\) and T2 \((r = .87)\) and a strong correlation between coefficients for groups T1 \((r = .77)\) and K2 \((r = .62)\). This suggests that there is a strong to very strong relationship between groups’ depth of vocabulary and syntactic awareness. It is notable that the correlation between the VKS and RCT was lower than the correlation between the VKS and SAT. These two correlation coefficients correlated moderately for groups K1 \((r = .52)\), and weakly for groups T1 \((r = .37)\), K2 \((r = .25)\) and T2 \((r = .35)\) and the weak relationship are not statistically significant explaining the variation in the interrelationship between VKS and RCT in the previous section. Thus, other factors (such as type of test) than vocabulary knowledge explain success on the RCT component in this sample and will be discussed in Chapter 5. These results point to a stronger relationship existing between depth of vocabulary and syntactic awareness than the groups’ reading comprehension and vocabulary depth. Markedly, the correlation between SAT and RCT measured higher than VKS and RCT. That is to say, the SAT and RCT demonstrated a moderate to strong positive correlation with each other, moderately in groups K1 \((r = .48)\), T2 \((r = .58)\), T1 \((r = .47)\), and strongly in K2 \((r = .70)\). These results suggest that there is evidence to support further exploration and identification of additional syntactic variables relating to reading comprehension.

In answering the second research question, the relationship between coefficients VKS, SAT, and RCT, gave interesting results. Importantly, the SAT and RCT correlated significantly, with a moderate correlation \(r = .58\) while the VKS correlated only weakly with RCT \(r = .39\). The results also showed the SAT and RCT correlating significantly. These results offer compelling support in confirming syntactic variables as having a moderate relationship with reading comprehension and stressing the significant relationship between vocabulary depth and syntactic awareness. Further analysis revealed a parallel pattern in the data between the groups’ depth of vocabulary knowledge, syntactic proficiency, and reading comprehension. Groups scoring on the VKS and SAT were in alignment with their RCT scores; low scoring groups scored consistently low on all three tests, and higher scoring groups scored consistently higher. They scored consistently lower than the groups’ mean on all three tests. The overall
results from the correlation tests confirm the moderate to strong relationship between syntactic awareness and reading comprehension as well as the collaborative relationship between the depth of vocabulary and syntactic awareness.

4.3 Summary

This section reported the results from the two research questions. The findings in answer to the first research question revealed a wide range of results and a moderate to statistically significant difference between the groups’ depth of vocabulary, syntactic awareness, and reading comprehension. Thus, demonstrating how low depth of vocabulary, syntactic awareness scores, and individual differences affected learners’ comprehension of lexical and syntactical items found in informational texts. Further analysis of the syntactic test provided considerable insight into common issues shared by the participants. These results identify and give insight into problematic syntactic components disrupting the reading comprehension process at sentence and text level. What was most surprising was the range of individual variation in the participants’ language and reading skills.

In addition, the findings for the second research revealed a stronger relationship between the SAT and RCT than the VKS and RCT. A moderate correlation was established between the SAT and RCT and a strong relationship between the VKS and SAT. These findings are in compliance with the relationship calculated between the groups. To accumulate adequate reading comprehension scores, learners must acquire efficient depth of vocabulary and syntactic awareness. Overall, the findings seem to be well supported by demonstrating corresponding results from the correlation test results. Given the findings, there is a strong probability that chunks of words made up of lexical items and syntactical components affected the groups’ reading comprehension.
5 Discussion

The main objective of the current study was to examine upper secondary school learners’ depth of vocabulary knowledge, syntactic awareness, and reading comprehension as well as the relationship between the variables. The analysis of the tests revealed that the learners’ depth of vocabulary and syntactic awareness affected their reading comprehension of questions and passages in the test. Furthermore, the most striking result to emerge was the considerable variance in proficiency in learners’ vocabulary depth, syntactic awareness, and reading comprehension. What is more, the relationship measured between the groups’ syntactic awareness and reading comprehension provides considerable support for syntactic awareness contributing to reading comprehension of informational texts.

This chapter will discuss the interpretations of the findings from the study in relation to existing research beginning with learners´ knowledge of vocabulary depth, syntactic features, and reading comprehension before discussing the relationship between the three variables. Thereafter, the limitations of the study are considered and the chapter is concluded with a summary drawn from the discussion as well as discussing future studies on the matter.

5.1 Learners´ Knowledge

One of the aims of this study was to examine Icelandic upper secondary school learners´ 1) vocabulary depth, 2) syntactic awareness, and 3) reading comprehension. Having adequate knowledge of vocabulary depth and syntactic structures contributes to learners´ reading comprehension. That being said, this study obtained data from 66 learners to measure the knowledge of the above variables. The findings uncover low proficiency in syntactic awareness and reading comprehension. It is interesting to note that groups displaying low proficiency in one factor were likely to score low on other factors. Furthermore, gaps were identified in their syntactic awareness and the implications of their effect will be discussed in this section. These differences can be accounted for in part by a considerable variance in competence in learners´ knowledge and reading ability due to individual differences.
5.1.1 Vocabulary depth scores

In general, the groups’ depth of vocabulary varied and a considerable difference was found in their self-reported word knowledge. The groups’ overall score was 76.30, ranging from a low score of 65.46 to a high score of 80.71. According to Anderson and Freebody (1981), two types of vocabulary exist, an individual’s breadth and depth of vocabulary. While a number of words’ meanings may be receptively recognized, productive use only transpires with a deep knowledge of multi-faceted distinctions. Gains in the size-depth relationship do not occur in parallel, as each aspect has a tendency to increase independently of each other (Schmitt, 2014). Therefore, acquiring proficiency in construing sentences correctly entails having undergone a long strenuous process of linking a vast amount of words with their semantic, syntactic, and pragmatic meanings.

The most recognizable and manageable words in the VKS were members of the first frequency level. The groups’ results demonstrate reasonable knowledge of high-frequency words presented in the VKS. Words such as correct, healthy, simple, and stage were easily recognized and used productively by participants. On the whole, high-frequency words appear more frequently than other words. Research has established that recurrent exposure to these lexical items increases readers’ automatic sight vocabulary (Ehri, 2005). Such exposure enhances not only readers’ identification of items’ pronunciation and meaning but also their automaticity in word recognition (Perfetti; 1985; Segalowitz, Segalowitz, & Wood, 1998). Although shorter, single-syllable words are normally accumulated first (Nation, 2001), acquisition of less frequent words can take place with frequent exposure (Ehri, 2005). Without a doubt, recognition of the most frequent and useful words assists readers in becoming proficient in decoding and identifying words by sight.

Examining participants’ knowledge of vocabulary item reveals low processing skills of less known words. The results from the VKS demonstrate low word knowledge of specific lexical items and phrases. Groups with higher vocabulary knowledge scores demonstrated higher skills in recognizing, interpreting, and producing sentences with chosen words and phrases in the VKS. This suggests that their lexical processing and identification of individual words and phrases’ syntactic, semantic and pragmatic cues
are easily accessed and utilized further to interpret meanings and relationships (De Bot, Paribakht, & Wesche, 1997). However, groups with lower outcomes recognized fewer words and had less ability in decoding and guessing meaning based on grapheme-phoneme mappings.

Unquestionably, individual differences affect the groups’ results on the tests as seen in the vast group differences. Individual differences is a broad term referring to learners’ learning characteristics, styles, strategies, motivation, as well as learners’ demographic and effective variables, cognitive and language aptitude, and culture (Ehrman, Leaver, & Oxford, 2003). According to Larsen-Freeman’s (1997) Complexity Theory, L2 acquisition is a social function that is emergent, dynamic, and systematically constructed by its users, or agents. Since language is emergent, self-organizing, open, and nonlinear, it is subject to constant change due to its agents use and word frequencies (Larsen-Freeman, 1997). Instead of regarding individual differences as residual waste, its nonlinear methods and attitude toward language acquisition consider behavior dynamics as part of the system. For this reason, recognizing the effects of participants’ individual differences on the results is crucial. However, as language is assumed to be the consequence of adaptation to their exposure to the dynamic system through social interaction, it is necessary to evaluate language deficiencies in order to create new input. The groups’ common issues could be attributed to their exposure to the complex linguistic environment in Iceland where English exposure is dependent on extramural exposure more than it is on educational exposure (Birna Arnbjörnsdóttir, 2015; Ásrún Jóhannsdóttir, 2010). In reviewing the participants’ production in the test assists in creating new input. Resultantly, the environmental conditions can adapt and differences in individual experiences may affect learners’ language acquisition of morphological, syntactic, and pragmatic aspects.

5.1.2 Syntactic awareness scores

This study showed learners’ syntactic awareness to be similar to their depth of vocabulary knowledge. Overall, the groups scored a mean of 21.09 out of 29 possible, or an average of 73%. Strikingly, a considerable range characterized the results from the syntactic test, or scores ranging from 10 to 27. This provides insight into how low levels of syntactic awareness will have affected learners’ comprehension of grammatical and
syntactical items in the test. Due to the variance of results, similar to the depth of vocabulary outcome, it is difficult to ignore the influence of individual differences on their acquisition of grammatical and syntactic rules and results on the test. Accordingly, the test results were examined further to evaluate recurrent issues of grammatical and syntactic items presented in the test.

Syntactic parsing is an important contributor to reading comprehension. However, for successful language acquisition to take place, learners need to acquire proficiency in evaluating and manipulating structural information from chunks of words bundled together with the rules of grammar (Fodor, 1998). Grammatical cues such as tense, prepositions, pronouns, determiners, articles, conjunctions, and adjectives assist in solving the riddle or understanding the true meaning of the sentence.

That being said, the most noticeable problems in the ESL grammar proficiency test were related to learners´ ability in selecting the correct tense, pronouns, and subordinating conjunctions. As syntactic awareness and parsing are direct contributors to successful reading, low proficiency in knowledge and identification of multiple sentence structures hinders the correct deciphering of meanings. Research has demonstrated the vital function of syntactic parsing in processing cues and structures in sentences (Demont & Gombert, 1996; Nation & Snowling, 2000, Grabe & Stoller, 2002), the more complex and ambiguous syntactic structures the heavier the impact on learners´ reading processing time (Carpenter, Miyake, & Just, 1994). Having syntactic awareness of a language promotes identification of multiple sentence structure and as a result, increases comprehension of ambiguous meanings presented in texts.

Development of syntactic awareness is an offspring of learners´ syntactic awareness and enables them to assess, correct, and manipulate language as an object (Zipke, Ehri, & Cairns, 2009). Those scoring low on the grammatical test demonstrated low levels of knowledge and awareness of grammatical and syntactic structures, decreasing their ability to evaluate correct answers from incorrect on the multiple choice test. Therefore, further exposure, implicit or explicit, to multiple types of sentence structures may increase grammatical knowledge and development of automaticity in syntactic parsing skills.
Assessment of learners’ outcomes from the sentence skills test, demonstrated a lack of syntactic awareness of complex rhetorical and syntactic structures. According to Biber (2006), informational texts can be identified by their use of nominalization, prepositions, passives, and phrasal coordination. As academically written informational texts are created to persuade the reader, formulation and rhetorical preferences used to convey an argument or idea coincides with their general assumptions, methods of discourse, and knowledge (Hyland, 2011). The data from the current study shows low syntactic proficiency in evaluating and comprehending conventional rhetorical devices characterizing informational texts, e.g. OVS sentence structures, embedded phrases, sentence reduction, nominalization, and relative clauses. The groups scored an average of 54% in evaluating correct sentence structures and 78% when ask to choose the compounded structure of two sentences. Although the groups’ knowledge of phrasal coordination was moderate, their proficiency in evaluating different multiclausal structures, agent-patient order, and nominalization was relatively low. These outcomes revealed that the groups’ inadequate sentence-level comprehension of complex sentences contributed to their reading comprehension difficulties.

Implications of the test results are that learners need to become more aware of sentence coordination and nominalization as they contribute significantly to the multiplexity of informational texts. As Klinck (1992) discusses, phrasal coordination is utilized in writing for stylistic purposes and its usage increases the complexity and density of texts. Key participants in introducing actors and receivers of action through phrasal coordination are nominal groups, adjectival or noun phrases. Nominalization occurs when verbal information from a previous sentence is transformed into nominal information, e.g. to transfer becomes Such transfer, he dedicated becomes His dedication (Scott & Balthazar, 2010). Not only does the original verb or adjective undergo affixation but also the sentence becomes condensed with additional prepositional phrases to convey contrasting propositions. This underlines the groups’ insufficient knowledge of affixed words in the VKS affected their decoding and encoding of complex rhetorical devices used to modify, extend, and condense information through phrasal coordination.

In the same way, condensed sentences with adverbial clauses added to tests’ complexity and the groups’ results. The most problematic were embedded adverbial
clauses. Conventionally, embedded adverbial clauses begin with an adjoining conjunction and link themselves to a main clause making them subordinate, or dependent, on the main clause. Their function is to provide additional information and answers to questions such as why, how, when, to what degree, where (Benner, 2011). To complicate matters, Berman (1984) argues that adverbial phrases positioned ahead of the main clause, cause even more difficulty in understanding complex sentence structures. Given these points, learners´ must acquire grammatical proficiency in evaluating structural information from chunks of words diversely sequenced in complex sentences.

Specific syntactic aspects learners need to develop is their knowledge of relative pronouns and clauses. The lowest outcome of the test regarded learners´ evaluation of correct relative pronoun use (67%) and defining and non-defining relative clauses (55%). As relative clauses nature is to give additional information for nouns, their tendency to increase density of information and embeddedness increases learners´ syntactic processing of multicausal sentences (Berman, 1984). Mainly because center-embedded relatives interrupt the connection between the subject and the verb with long-distance dependencies. Non-defining relative clauses providing unnecessary information rendered difficult for the groups, scores ranging from 47-65%, while non-defining relatives can be omitted, defining relative clauses cannot. Distinguishing between the two is crucial for a sentence´s meaning. Fundamentally, learners need to acquire proficiency in grasping syntactic complexity and knowledge of grammatical variations to process, interpret, and comprehend a text.

Obviously, evaluation of complex rhetorical conventions where phrases are layered into sentences puts demands on learners´ working memory. Low background and textual knowledge inhibit extraction of information from multicausal sentences. When constructing coherent understanding from complex sentences under normal circumstances, the working memory works as an information detangler, storage, and handler. Birch (2007) asserts that the long-term working memory´s function is to retain meaning when sentences contain multiple clauses and less recognized vocabulary. Nevertheless, having sufficient working memory capacity is not enough as word knowledge is a prerequisite of deriving meaning (Barnes et al., 1996).
As previously discussed, the groups’ syntactic awareness varied considerably, those scoring low on the VKS also demonstrated low syntactic awareness. Individual differences in learners’ appeared as the syntactic test complexity level increased and affected their processing of syntactic information at the sentence level.

5.1.3 Reading comprehension scores

Results from the reading comprehension test demonstrated groups’ low coverage rate of the two passages. Both passages presented in the study gave a 98% coverage rate at the seventh frequency level. The first passage’s, the SAT reading test, reading level was determined as average or standard (Flesch Reading Ease 59.78), whereas the second passage, the Compass Reading Test, scored a reading level of difficult to read (Flesch Reading Ease 41.95). The groups acquired a score of 76% on the VKS and 73% on the syntactic test, showing their productive depth of knowledge in linear disperse with their syntactic awareness. However, a 44% average score on the comprehension test demonstrates a gap in their language and reading proficiency.

To begin with, inferring the main idea from both passages proved difficult for all groups. Only 41% of the groups inferred correctly the main idea of each passage, ranging from 26-59%. Constructing meaning from a text is a top-down process. Those who have acquired sufficient top-down processing need not read each word to decipher meaning from word forms as they have gained automaticity in recognizing words, using background knowledge and developing schemata to decipher meanings from clues in the text (Bartlett, 1932). By acquiring lower- and higher-level processing, learners can use the interactive model of reading to form meanings from written texts quickly and efficiently. However, the groups’ score demonstrates low proficiency in higher level processing, suggesting their processing and comprehension of the passages rendered difficult to maintain.

Second, the groups’ background knowledge increased their comprehension of the second passage. Although the passages had similar coverage rate at the 7,000-word frequency level, the second passage had a lower readability rate of 41.95, or difficult to read, opposed to the first tests average readability rate of 59.78. These outcomes may be attributed to their discourse knowledge of the subject matters. That is to say, their overall knowledge of the grieving process, or grief in general, is higher than their
knowledge of economics and money managing. Suggesting that individual differences also seem to affect their reading ability, e.g. age, background knowledge, motivation, schooling and socio-economic level, and individual cognition (Carrel & Grabe, 2010). Connecting prior knowledge with a text increases the likelihood of building a comprehensive interpretation of the text.

Third, the groups showed insufficient lower-level processing skills in creating meanings from target sentences. Each passage presented a task where the groups needed to interpret information from a sentence. 49% of the participants interpreted the sentences meaning correctly. Construction of ideas occurs at the lower-level processing stage with word recognition, syntactic parsing, encoding word meaning, and grammatical information embedded in sentences (Grabe, 2009). Generation of meaning involves applying the working memory and word knowledge resources in creating an interpretation. When extracting information, readers collect chunks of words together and combine them with other relevant strings of words and slowly form an interpretation (Fodor, 1998). While word recognition relies heavily on word knowledge, successful syntactic parsing depends on syntactic awareness. More complex and ambiguous sentence structures affect the reading process (Carpenter, Miyake, & Just, 1994). Undoubtedly, groups scoring higher on this task demonstrated higher linguistic and processing skills in determining the proposition conveyed in the sentence than those who scored lower on this task.

By the same token, the groups demonstrated low proficiency in inferring words definition from the passages. Another task presented in the two comprehension tasks involved inferring the words economy and cathartic’s meanings as they are used in the passages. 50% knew the correct definition for economy and 33% could infer cathartic’s meaning from the text. In all, 41% deducted the two words meanings correctly. An important skill for all readers is having the ability to utilize contextual and morphemic clues when encountering unfamiliar words (Nagy & Scott, 2000). Those capable of making use of clues found in the primary information are estimated to grasp the meaning of an additional one to three words to every known word (Nagy & Anderson, 1984). Nagy and Gentner (1990), assert that three problems affect L2 ability to infer meanings of unknown words, 1) low language in identifying syntactic clues connected to words’ meanings, 2) having more productive skills than receptive knowledge of
syntactic structures to guess meanings, and 3) L2 cross-linguistic transfer of syntactic awareness manipulating prediction of correct meanings from unknown words. Obtaining effective language skills assists learners in making use of clues, predicting, and matching unfamiliar words to their meanings.

Notably, groups’ knowledge and evaluation of the first passage’s genre and audience was strikingly low. At this stage in their studies, the groups should be aware of the criteria of multiple genres. As informational texts are written in a formal and detached style (McCarthey, Matthiessen, & Slade, 2010), multiple linguistic tools are applied to organize a discourse to convey a proposition (Hyland, 2000). A crucial aspect in acquiring L2 reading comprehension is having a general understanding of how genres are structured (Carrel & Grabe, 2010), why certain linguistic resources are applied, and for whom they are dedicated. McNamara and Kintsch (1996) argue that the interaction between reading components and contextual features, e.g. genre and various linguistic components, leads to comprehension. Promoting comprehension of knowledge of various themes, discourses, and for whom a text is dedicated, assists learners in expanding the meaning and purpose of the text.

In regards to the first research question and given the findings, the study illustrates a wide range of individualized proficiency in vocabulary depth, syntactic awareness, and reading comprehension. Notably, the results suggest individual differences affecting their outcomes on the three tests. Examination of learners’ outcomes from the syntactic awareness test, demonstrated low proficiency in determining correct structures of multi-complex rhetorical devices. As the complexity level heightened, the learners’ inadequate lower level and higher level processing affected their ability to comprehend the informational texts presented in the study. Given these points, in order to comprehend rhetorically complex and higher density texts, learners must acquire multi-faceted linguistic knowledge and discourse conventions to interpret propositions disclosed in informational texts.

5.2 Relationship between Vocabulary Depth, Syntactic Awareness and Reading Comprehension

The second research question addressed the relationship between the Icelandic upper secondary school learners’ depth of vocabulary, syntactic awareness, and reading
comprehension. The data showed a stronger relationship between syntactic awareness and reading comprehension than vocabulary depth and reading comprehension. The relationships between variables are discussed along with their implications.

Evaluation of the three tests revealed low proficiency in depth of vocabulary and syntactic awareness influencing learners’ comprehension of contents tested. The results from the correlation analysis, as summarized in Tables 22 and 23, demonstrate that theoretical and empirical findings presented in the current study are credible. Similar to vocabulary depth’s established contribution to reading comprehension, it was expected that syntactic awareness would correlate significantly with reading comprehension. The act of reading has been referred to as a “psycholinguistic guessing game” (Goodman, 1967, p. 135-142) composed of an "integration of many component skills" (Grabe, 2014, p. 6). This involves having recognition of vast amount of words, adequate semantic and syntactic processing skills, and fluency in reading efficiently. The groups scoring an average of 44% on the comprehension test demonstrates inadequate word knowledge, processing skills, and construction of contextual meaning. It is evident from the results that complex lexical, syntactic, and structural organization of the passages influenced its readability for Icelandic upper secondary school learners.

In the current study, syntactic awareness presented a strong correlation with vocabulary depth. Results show a strong relationship between vocabulary depth and syntactic awareness ($r = .80$). In evaluating the correlation of coefficients between each groups´ test results, significant correlations were found between the groups´ results for the VKS and SAT, ranging from a strong correlation of $r = .62$ to a very strong correlation of $r = .87$. Therefore, it seems likely that a learner scoring high on the vocabulary knowledge test will also score high on the syntactic awareness test. Research has established that vocabulary and syntactic awareness assists readers in building situational models in interpreting information by associating words with meanings and utilizing grammatical cues (Kintsch, 1998; Perfetti & Britt, 1995). For successful comprehension, learners must acquire grammatical knowledge of words and phrases to understand how words and sentences are constructed (Larsen-Freeman & DeCarrico, 2010) for the purpose of building a situational model by abstracting, generalizing and extracting information from a text.
Notably, the correlation of measures between the VKS and RCT was lower than expected. That is to say, the results demonstrate a stronger correlation between syntactic awareness and reading comprehension than vocabulary depth and reading comprehension. While the interrelationships calculations show syntactic awareness correlating moderately with reading comprehension ($r = .59$), vocabulary depth and reading comprehension correlated weakly ($r = .39$). Additionally, evaluation of the correlation between the groups’ results of the VKS and RCT measured weak to moderate ($r = .25$, $r = .28$, $r = .37$) to moderate ($r = .51$) association between the two variables. These results indicate a stronger relationship between syntactic awareness and reading comprehension than groups’ vocabulary depth and reading comprehension.

According to Nation (2001) and Schmitt (2010), a strong relationship exists between L2 reading comprehension and word knowledge, or lexical items form, meaning, and use. The interaction between the two variables affects them cyclically and mutually.

As reading is an interactive process, and the fact that individual differences cannot be excluded, the learners’ working memory may explain the low relationship between vocabulary depth and comprehension. When reading, the lexical process, bootstrapping, construes textual and lexical interpretations by activating syntactic, semantic and pragmatic knowledge within the working memory (De Bot, Paribakht, & Wesche, 1997). Sentences consisting of more complex syntactic structures and high density of unknown lexical items, activate the long-term memory to retain meaning as a text is read (Birch, 2007). However, lack of memory affects learners’ intake of information, construction of meaning, and comprehension of ideas. Under those circumstances, the groups’ lack of vocabulary knowledge of lexical items affected their processing of textual features which in turn influenced their comprehension of vocabulary items in the test.

Additionally, the weak correlation between vocabulary depth and reading comprehension may indicate low background knowledge of the subjects and discourse in the test. Reading purpose and genres influence the construction of situational models (Grabe, 2009). According to Singer and Leon (2007), reading informational texts influences the situation model of interpretation. The reading comprehension results for
the first passage, show that groups’ knowledge and evaluation of genre and audience was notably low. Their overall scores were lowest for the first text and when asked to evaluate for whom the text was written, only 33% answered correctly. According to the texts coverage and readability rate, this texts calculated to be less difficult than the second text. Given these points, awareness of morphological and grammatical structures distinguishing complex rhetorical discourse components need to be promoted in the hope of increases learners’ comprehension of informational texts.

What was not anticipated was the correlation analysis of syntactic awareness and reading comprehension exceeding expectations with a statistically strong correlation with reading comprehension. The syntactic awareness and reading comprehension test correlated significantly with a moderate correlation of $r = .59$. The interrelationship measured between the SAT and RCT indicates that syntactic awareness of variables measured in the test affects reading comprehension. It is notable that the correlation between the groups’ results of the SAT and RCT measured higher than VKS and RCT. That is to say, the SAT and RCT demonstrated a moderate to strong positive correlation with each other, moderately in groups T2 ($r = .47$), K1 ($r = .48$), T1 ($r = .58$), and strongly in K2 ($r = .70$). The findings reveal a stronger relationship in groups that scored lower than those scoring higher. The lower correlation between the groups’ vocabulary knowledge and reading comprehension can be explained in part by the type of test used to measure depth, the VKS. In general, vocabulary depth tests, such as the VKS, are inherently productive in nature. Their main function provides information relating to learners’ depth of vocabulary, or a combination of their receptive and productive knowledge, and not their overall receptive word knowledge of the target words. Due to the complex nature of the informational texts used in the study, syntactic awareness demonstrates a stronger relationship with reading comprehension than mere vocabulary knowledge.

Considering this, rhetorical devices such as lexical density, formulaic sequences, complex sentences, normalization, subordination, and phrasal coordination used in informational texts differ greatly from conversational language (Halliday, 1987; Biber, 1986). Rhetorical conventions distinguishing informational texts and used to convey writer’s theories or ideas, not only adds voice to a text but its morphosyntactic, semantic, and pragmatic structures affect its readability rate for newcomers. For this
reason, metalinguistic awareness is a crucial facet in facilitating reflection and manipulating structural features of language, e.g. *unreasonable* (un+reason+able), (Tunmer, Herriman, & Nesdale, 1988; Carlisle, 2003; Nagy, 2007). That being said, low results on the syntactic awareness and reading comprehension tests give an indication of insufficient knowledge and comprehension of informational texts.

### 5.3 Limitations of the Study and Future Research

The test results provided a vast amount of data on learners´ vocabulary depth, syntactic awareness, and comprehension. The outcomes of the tests were presented and discussed giving an overall description of upper secondary learners´ depth of knowledge, syntactic awareness, and their reading comprehension of informational texts. In my opinion, many learners demonstrated extremely low linguistic knowledge and reading comprehension. Considering these results, many learners may not have benefited sufficiently from their years of English instruction and learning for the purpose of acquiring effective reading ability for prosperous job growth and personal development.

The test samples were chosen by the researcher and are, for the most part, standardized tests used by authorized government sources. The test would have benefited from a pilot study to evaluate and identify problematic items beforehand. Future studies should develop specific tests to acquire generalizable outcomes for syntactic awareness.

Several issues were not addressed in the study. For instance, it is evident that individual differences affect learners´ language development and comprehension. Individual differences in background knowledge, vocabulary knowledge, syntactic awareness, motivation, and mental processing attribute to successful reading comprehension. For this reason, future studies should take into account additional variables to identify gaps in learners´ knowledge and reading comprehension. As previously discussed, language acquisition is a consequence of adaptation to exposure through social interaction (Larsen-Freeman, 1997). Learners´ acquisition can never be more than the functional exposure a language environment offers at any given time and is guided by multiple individual differences, e.g. learning characteristics, styles, strategies, motivation, demographic and effective variables, cognitive and language
aptitude, and culture. Considering this, existing research has established that Icelandic learners’ English exposure is more dependent on their extramural exposure than intramural exposure (Birna Arnbjörnsdóttir, 2015; Ásrún Jóhannsdóttir, 2010). At the same time, newly graduated jobholders report that they quickly experience low proficiency in formal English vocabulary and grammar, and attribute it to the non-challenging English education the Icelandic educational system offers.

Through the years grammar instruction has been reduced due to misconceptions and low acknowledgment of its relationship with reading comprehension. This study sought to examine this unpopular variable and as a result established a case for further research on syntactic structures and obstacles hindering comprehension of informational texts. By acknowledging syntax as a contributor and researching its importance further can lead to the production of new and more challenging in-class input for the purpose of increasing learners´ comprehension of complex texts.

5.4 Summary

In this chapter, I have discussed the findings of the study in view of existing and recently acquired knowledge. We can see that the results confirm a considerably varied outcome on the tests and a significant difference was found in the learners´ vocabulary depth, syntactic awareness, and reading comprehension. Low language proficiency and individual differences affected participants´ comprehension of complex rhetorical structures found in the test. Markedly, the correlation analysis of syntactic awareness demonstrated a statistically strong relationship with vocabulary depth and reading comprehension, consequently putting the case for syntax. I have briefly discussed the limitations of this study and suggestions for further research which could call to attention other syntactic elements affecting reading comprehension of informational texts. The concluding chapter takes into consideration the study´s findings and directs its attention to their value and implications.
6 Conclusion

The present study sought to identify Icelandic upper secondary school learners’ vocabulary depth, syntactic awareness, and reading comprehension and the relationship between their depth of vocabulary, syntactic awareness, and reading comprehension. In acquiring data, 4 groups of learners, 66 participants, from 2 upper secondary schools answered three types of tests to evaluate their depth of vocabulary, syntactic awareness, and comprehension of informational texts. Taken together, the central finding of the current study demonstrated a strong relationship between syntactic awareness and vocabulary depth on the one hand and reading comprehension on the other. As the syntactic test’s complexity level increased, the participants’ individual differences emerged. Identification of differences demonstrates a lack of vocabulary depth and syntactic awareness affecting their processing of semantic and syntactic information, resulting in unsuccessful comprehension at the sentence and text level. For successful reading comprehension to occur, in the case of this study, syntactic awareness is necessary for efficient syntactic parsing of complex sentences to encode and decode chunks of language to interpret ideas and propositions conveyed in informational texts.

Acquisition of a sizable breadth of knowledge and multifaceted depth of knowledge is a primary facet in acquiring adequate reading comprehension (Anderson and Freebody, 1981). According to Hu and Nation (2000), L2 readers need to have sufficient vocabulary of several thousand words to understand 98% of texts. The findings from the VKS demonstrate that learners had more receptive than productive word knowledge of words. High-frequency words which learners are more likely to encounter rendered more recognizable than other less frequently used words. Overestimations and misinterpretations of less recognized words are attributed to their lack of extracting information phonologically, associating morphemic cues with clusters of letters or word parts (prefixes, suffixes, inflectional endings) (Nagy, Herman, & Anderson, 1985; Adams, 1990), and making correct semantic distinctions. This, in turn, affected the ability to predict meanings of unfamiliar words which would otherwise provide an additional one to three words to every known word (Nagy & Anderson, 1984). For this reason, possessing knowledge of multi-dimensional morphological,
semantic, and syntactic functions of language increases learners´ vocabulary knowledge and coverage of informational texts.

Along with vocabulary depth, syntactic processing components contributed to the learners´ comprehension of complex informational texts. Due to an immeasurable amount of sentence structures, promotion of syntactic awareness is necessary for efficient parsing of sentences to decipher constraints, formulaic sequences, and genre of texts (Grabe, 2009). While syntactically similar sentences and syntactic repetition reduces the possibility of ambiguities, some sentences structures will always be more challenging to interpret (Ledoux et al., 2007; Tooley et al. 2009). The results of the learners´ syntactic awareness test demonstrated low syntactic awareness for specific syntactic variables measured in the test. Evaluation of the results provided insight into recurrent grammatical and syntactic issues commonly shared by the Icelandic learners. A vital aspect in facilitating the form-meaning connection with chunks of words organizing sentences involves making use of contextual clues and rules.

Successful reading comprehension requires competence in lower level and higher level processing. Utilizing bottom-up and top-down processing simultaneously assists in synthesizing meaningful chunks of words, sentences, or paragraphs into useful information which is then manipulated to construct a representation of a text by building a situational model (Gernsbacher, 1990; Johnson-Laird, 1983; Kintsch, 1998). When reading lengthy and complex sentences containing unfamiliar vocabulary and syntactic structures, the long-term memory´s role becomes more important in retaining meaning for overall comprehension. While skilled readers have acquired automaticity in word recognition and can easily consolidate entire sentences efficiently, less skilled readers rely on their decoding skills and only extract information partially (Daneman, 1991). Consequently, reducing their competence in extracting vital information used to construct meaning and comprehension. The findings showed prevailing issues in the learners´ knowledge of lexical and syntactic structures. As learners´ prior knowledge affects their construction of interpretations, individual differences can determine their ability to construe meanings being conveyed. That being said, failure to comprehend a passage occurs when the interaction between learners´ cognitive skills and processing is disrupted by low linguistic proficiency and background knowledge.
The current study had several limitations. A future study might take into consideration variables related to learners’ individual differences. Secondly, the instruments used in the study may have affected the outcomes. Using a reading test developed for native speakers, may not give representative results when measuring reading comprehension of non-native speakers with different language proficiency and cultural background. Future research should analyze the syntactic tasks´ reliability before applying them in tests. Finally, further evaluation of learners´ syntactic awareness progression is needed at lower and higher educational stages. Taken together, the study’s affirmation of the varied skill levels of learners, even within the same school, suggests that more information and a larger sample are needed to establish the findings and to identify additional gaps in their syntactic awareness affecting comprehension. The results of this study are encouraging and have gone some way towards enhancing our understanding of the relationship between syntactic awareness and reading comprehension. For this reason, this research has given rise to the need for further examination and can be considered as a pilot study for a larger study.

Reading is a journey where multiple destinations (interpretations) can be explored if travelers have adequate knowledge of the instruments (words) and coordinates (syntax). Although successful reading comprehension depends on the acquisition of a vast amount of words and their multi-faceted characteristics, drawing appropriate meanings from multiple sequenced chunks and strings of words is impossible without efficient syntactic awareness of multi-phrasal structures. That being the case, the nature of the syntactic complexities readers experience when reading informational texts needs to be acknowledged. Acquiring sufficient syntactic awareness of rhetorical discourse structure increases learners’ capability of navigating through informational texts for future employment and development.

Based on the findings from this study, it may be beneficial to identify particular syntactic discourse structures hindering fluent reading comprehension of complex texts. Lack of syntactic parsing skills of complex sentence structures can cause persisting comprehension problems of rhetorical devices used to convey meaning, e.g. nominalization, subordinating conjunctions, phrasal coordination, embedded phrases, and text construction. The chunk of the matter is equipping learners with substantial English language proficiency for them to mature personally and professionally by
offering effective instructional material. This entails acknowledging syntactic awareness as a coordinating device necessary for reading comprehension of informational texts, and not as consequential residue awaiting uptake.
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Appendix I

Ágæta foreldri/forraðamaður.

Ég undirrituð, ne mandi við Háskóla Íslands, er að ljúka MA ritgerð í ensku kennslu. Hlutí af ritgerðinni minni er að skoða áhrif málfraði á lesskilning með það að markmiði að greina þá þætti sem auka lesskilning framlægðmál samsetnum í ensku. Ég hef óskað eftir alls 70 nemendum til að taka þátt í könnuninni. Samstarfssóknarinnir í verkefninu eru Tækniskólinn og Menntaskólinn í Kópavogi. Könnunin tekur um 45-60 minútur. Um er að ræda þriðjað próf sem mælir dýpt orðafórd, málfraði og lesskilning nemenda á öðru þörfi í ensku.

Nöfn þátttakenda og aðrar persónuupplýsingar koma hvergi fram við úrvinnaði úr neinum af þeim gögnum, sem safnað verður. Rannsóknin hefur verið tilkynnt til persónuverndar samkvæmt lögum um meðferð persónuupplýsinga.

Með þessu bréf er óskað eftir samþykki foreldra/forraðamanna fyrir þátttöku barna þeirra í könnuninni. Ég bið því vinsamlegast um leyfi fyrir að ungmanni þitt taki þátt í rannsókninni. Ef þu eft samþykki/ur þátttöku þarf tu ekkert frekar að gera. Ef þú vilt ekki að ungmanni þitt taki þátt, vinsamlega ritaðu þá nafn þitt hér fyrir neðan og skilaðu breifni til kennara fyrir 14. mars 2017. Nánari upplýsingar um verkefnið veitir undirrituð í síma 691-9315 eða í tölvupósti sbv5@hi.is

Súsanna Björg Vilhjálmsdóttir
Í MA námi í ensku kennslu á framlægðmálseti

Ég vil ekki að ungmanni mitt taki þátt í rannsókninni.

Skóli: ______________________________________________________

Nafn ungmanns: ______________________________________________

Undirskrift foreldris/forraðamanns: ____________________________________________
Í þessari könnun er verið að kanna áhrif málfraðilegra þáttta á lesskilning nemenda. Könnunin er liður í því að skoða þá þætti sem torveldar lestur á flóknum textum sem skrifð eru á ensku. Sá sem framkvæmir könnunina er mastersnemi í enskukennslu við Háskóla Íslands. Þú hefur verið valin(n) til að taka þátt í eftirfarandi könnun. Óskað er eftir því að hver og einn leggi sig fram við að svara prófunum eftir bestu getu og að svör séu vel og vandlega þhuguð. Farið er með svör og niðurstöður sem trúnaðarmál. Ëg þakka þér fyrir þann áhuga sem þú sýnir þessari könnun.

I. Eftirfarandi spurningar eru almenns eðlis og eru nauðsynlegar fyrir úrvinnslu gagna. Vinsamlegast krossaðu við það sem á við og svaraðu spurningunum af bestu getu.

1. Kyn: Ert þú ( ) kvenmaður ( ) karlmaður ( ) annað

2. Hvað ertu gamall/gömul? ____________ ára

3. Í hvaða námi ert þú?

____________________________________


( ) Já  Hversu lengi ________________  ( ) Nei

5. Hvenær byrjaðir þú að læra ensku í skóla, í hvaða bekk? (1.bekk, 2.bekk o.s.frv.)

_____ bekk
6. Hefur þú

mikinn áhuga á að læra ensku í skólanum

lítinn áhuga á að læra ensku í skólanum

hvorki mikinn né lítinn áhuga á að læra ensku í skólanum

Takk kærlega fyrir þátttökuna!
**Appendix III**

**Self-report**

Below is a list of words. Rate how well you know these words on a scale of 1-5 by marking an X in the correct box. For instance, if you think you have seen the word before but you do not know its meaning, mark an X in box no. 2. If you know what the word means (number 4), mark the box with an X and write its meaning, and then try and use the word in a sentence in section 5. *Remember to try and write the word’s meaning if you mark no. 3 and/or 4.*

<table>
<thead>
<tr>
<th><strong>grieve</strong></th>
<th>1</th>
<th>I don’t remember having seen this word before</th>
<th>X</th>
<th>Write the meaning in the box</th>
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<tbody>
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<td></td>
<td>2</td>
<td>I have seen this word before, but I don’t know what it means</td>
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<td></td>
<td>3</td>
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<td></td>
<td>4</td>
<td>I know this word. It means</td>
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<td>5</td>
<td>I can use this word in a sentence.</td>
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<td>I can use this word in a sentence.</td>
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<td>I have seen this word before, but I don’t know what it means</td>
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Sentence: [X] Write the meaning in the box

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Sentence: [X] Write the meaning in the box

### manage

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Sentence: [X] Write the meaning in the box

### correct

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Sentence: [X] Write the meaning in the box
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Sentence:

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Sentence:
Appendix IV

1. Grammar Proficiency

Directions for questions 1–10

*Fylltu inn orð eða orðasambönd sem gera setningarnar hér fyrir neðan málfræðilega réttar.*

The sentence below has a blank space. Choose the word or phrase that makes a grammatically correct sentence.

1. _____ washing his sweater, Jacob hung it up to dry.
   a. After
   b. Before
   c. By
   d. Until

2. Dr. O’Hara is certain that someday, men and women will ______ to Mars.
   a. travel
   b. travels
   c. traveling
   d. traveled

3. Water _______ at a temperature of zero degrees Celsius.
   a. having frozen
   b. freezing
   c. freeze
   d. freezes

4. ______ you get a new haircut?
   a. Have
   b. Does
   c. Are
   d. Did

5. Jacques Cousteau will be remembered for his inventions and for ________ to marine science.
   a. dedication
   b. his dedication
   c. being dedicated
   d. his being dedicated
6. The children, who were tired of traveling, kept asking, “When _____ we get to the hotel?”
   a. have
   b. will
   c. did
   d. are

7. Galileo is most famous ________ that Earth revolves around the Sun, rather than the other way around.
   a. for having discovered
   b. for discovery
   c. his discovery
   d. in discovering

8. Men and women sometimes have difficulty understanding each other because they differently.
   a. communicate
   b. communicated
   c. have communicated
   d. communicates

9. ______ you can speak more than one language, you have

   the opportunity to make more new friends.

   a. So
   b. Before
   c. When
   d. Though

10. Light ______ faster than sound, which is why you see lightning before you hear the thunder.
   a. traveling
   b. travels
   c. having traveled
   d. will travel
2. Sentence Skills

Directions for questions 1 - 5

Í þessum hluta á að velja bestu útgáfuna af setningunni. Fyrsti kosturinn sem er í boði er eins og upphaflega setningin. Ef þér finnst setningin rétt eins og hún er skrifuð veldu þann kost. Ef ekki, veldu þá útgáfu sem er að þínu mati réttust.

Select the best version of the underlined part of the sentence. The first choice is the same as the original sentence. If you think the original sentence is best, choose the first answer.

1. Stamp collecting being a hobby that is sometimes used in the schools to teach economics and social studies.
   a. being a hobby that is
   b. is a hobby because it is
   c. which is a hobby
   d. is a hobby

2. To walk, biking, and driving are Pat’s favorite ways of getting around.
   a. To walk, biking, and driving
   b. Walking, biking, and driving
   c. To walk, biking, and to drive
   d. To walk, to bike, and also driving

3. Playing sports in school which is an activity meant to teach teamwork and leadership skills students can use later in life.
   a. which is an activity
   b. is an activity because it is
   c. being an activity which is
   d. is an activity

4. For a snake, shedding their skin up to eight times a year is part of a natural process.
   a. For a snake, shedding their skin
   b. A snake’s shedding its skin
   c. When a snake sheds its skin
   d. To shed its skin, for snakes

5. I was surprised by the noise peering through the window to see who was at the door.
   a. I was surprised by the noise peering
   b. I was surprised by the noise, peered
   c. The noise surprised me, peering
   d. Surprised by the noise, I peered
Directions for questions 6 – 10

Lestu setningarnar hér fyrir neðan og veldu bestu leiðina til að sameína þær í eina setningu. Read the two sentences below and choose the best way of combining them.

6. Lisa plays the piano. Her sister Kelly plays the piano, too.
   a. Lisa and her sister Kelly plays the piano.
   b. Both Lisa and her sister Kelly play the piano.
   c. Lisa plays the piano and Kelly plays the piano.
   d. Lisa and Kelly too play the piano.

7. Kazuko took her dog for a walk. They went to the park.
   a. Kazuko, going to the park, took her dog for a walk.
   b. Kazuko took her dog for a walk to the park.
   c. Kazuko took her dog for a walk because they went to the park.
   d. Kazuko and her dog went to the park, where she and the dog walked.

8. We knew it might get chilly at the football game. We brought along some extra blankets.
   a. We knew it might get chilly at the football game when we brought along some extra blankets.
   b. Bringing along some extra blankets, we knew it might get chilly at the football game.
   c. We brought along some extra blankets because we knew it might get chilly at the football game.
   d. It got chilly at the football game and we brought along some extra blankets.

9. Wolves are pack animals. They are rarely spotted alone.
   a. Wolves are rarely spotted alone if they are pack animals.
   b. Being pack animals, wolves are rarely spotted alone.
   c. After being pack animals, wolves are rarely spotted alone.
   d. Wolves are rarely spotted alone, although they are pack animals.

10. The alert lawyer exposed the convict comprehensively. The judge had to give a guilty verdict.
    a. The alert lawyer's comprehensive exposure of the convict ensured a guilty verdict.
    b. The alert lawyer's comprehensive exposasis of the convict ensured a guilty verdict.
    c. The alert lawyer's comprehensive exposement of the convict ensured a guilty verdict.
    d. The alert lawyer's comprehensive exposence of the convict ensured a guilty verdict.
Directions for questions 11 – 14

When you write a sentence, you need to know which of the relative pronouns: "who", "whom", "whose", "which", "that", or relative adverbs, "when", "where" and "why", to use. Most people avoid using the object form of "who", which is "whom", when speaking, but it is sometimes used in writing. However, the possessive form "whose" is used both in speaking and writing. In the exercises that follow, you need to select the correct relative pronoun for a number of sentences.

11. For students ______ background is more creative the treatment of the core subject areas would be more descriptive.
   a. whom  
   b. who  
   c. whose

12. The court must be satisfied that all persons ______ consent is required understand the legal effect of the adoption.
   a. whose  
   b. that  
   c. who

13. Finally, one of the students with ______ I had worked a couple of summers previously came back to me, just before I left, to discuss his third year project.
   a. whose  
   b. whom  
   c. who

14. It is an area of Belfast ______ routine policing is possible as a result of the virtual absence of political violence.
   a. which  
   b. where  
   c. when
Directions for questions 14 - 18

Stundum ofnotum við tilvísunarforðnöfn, that, who, and which. Í raun er hægt að slepπ þeim án þess að setningin verði málfarslega röng. Lestu setningarnar hér fyrir neðan og skráðu X í kassann ef þú telur að hægt sé að sleppa tilvísunarforðnöfninu (that, which).

Sometimes we overuse relative pronouns, such as that, who and which, and they can be left out of sentence without making the sentence incorrect. Read the sentences below and put an X in the box if you think the relative pronoun (‘that’, which’ etc.) can be taken out of the sentence. If not, leave the box empty.

☐ 15. Another system is the complaints procedure which members of the public can initiate against police officers.

☐ 16. The report that was eventually submitted by the researchers was not properly costed and would have led to financial problems if implemented.

☐ 17. We also need to engage with those theories which deconstruct the distinction between the "individual" and the "social".

☐ 18. The policy that the government pursued at that time was an example of 'laissez faire' economics.

☐ 19. The explanation which you gave for your absence at the board meeting was unacceptable.
Texti 1.

In the United States, where we have more land than people, it is not at all difficult for persons in good health to make money. In this comparatively new field there are so many avenues of success open, so many vocations which are not crowded, that any person of either sex who is willing, at least for the time being, to engage in any respectable occupation that offers, may find lucrative employment.

Those who really desire to attain an independence, have only to set their minds upon it, and adopt the proper means, as they do in regard to any other object which they wish to accomplish, and the thing is easily done. But however easy it may be found to make money, I have no doubt many of my hearers will agree it is the most difficult thing in the world to keep it. The road to wealth is, as Dr. Franklin truly says, "as plain as the road to the mill." It consists simply in expending less than we earn; that seems to be a very simple problem. Mr. Micawber, one of those happy creations of the genial Dickens, puts the case in a strong light when he says that to have annual income of twenty pounds per annum, and spend twenty pounds and sixpence, is to be the most miserable of men; whereas, to have an income of only twenty pounds, and spend but nineteen pounds and sixpence is to be the happiest of mortals.

Many of my readers may say, "we understand this: this is economy, and we know economy is wealth; we know we can't eat our cake and keep it also." Yet I beg to say that perhaps more cases of failure arise from mistakes on this point than almost any other. The fact is, many people think they understand economy when they really do not.
Which of the following statements best expresses the main idea of the passage?

a. Dr. Franklin advocated getting a job in a mill.
b. Getting a job is easier now than it ever has been before.
c. Earning money is much less difficult than managing it properly.
d. There is no way to predict changes in the economy.
e. Spending money is the greatest temptation in the world.

What would this author's attitude likely be to a person unable to find employment?

a. exculpatory
b. ingenuous
c. descriptive
d. conciliatory
e. incredulous

According to the author, what is more difficult than making money?

a. reading Dickens
b. getting a job
c. traveling to a mill
d. understanding the economy

Who is the most likely audience for this passage?

a. philanthropists
b. teachers
c. general readers
d. economists
e. children

What is the best definition of economy as it is used in this passage?

a. exchange of money, goods, and services
b. delegation of household affairs
c. luxurious accommodations
d. less expensive
e. efficient money management
Texti 2. The Grieving Process

Since its formulation, Dr. Kubler-Ross' stages of grieving have been an invaluable tool in understanding how people cope with loss. Although individuals may experience the stages of grieving in varying degrees and in various progressions, the average person tends to go through the following stages when grieving: denial, anger, bargaining, depression, and acceptance. While most of these stages seem natural, many people do not understand the importance of the anger stage in the grieving process.

When a person experiences a significant loss in his or her life, experiencing anger as a result of this loss is both cathartic and therapeutic; in other words, anger at one's loss provides an emotional release and allows for the beginning of the healing process. By directing one's anger at a deity, fate, or even oneself, grieving people can come to realize that tragedies are seldom the fault of an individual or a higher power; rather, loss is a natural part of living that each person must experience. Trying to assign blame can allow the grieving individual to abandon his or her anger by showing that there is no-one to whom blame can be assigned. Having no-one to blame allows the bereaved to begin to heal because he or she can begin to come to terms with the necessity of loss. If an individual cannot move beyond anger, however, he or she may exhibit destructive tendencies.

There are a number of ways that people can fail to properly go through the anger stage of the grieving process. Some individuals may never find an object for their anger. These people may feel a vague, continual irritability or may react unreasonably to circumstances. Other grieving individuals may assign blame to an object but not realize that a given person or entity is blameless. This may result in a loss of religious faith, an unreasonable hatred of an individual, or even self-destructive tendencies in those individuals who blame themselves. These and other destructive consequences may be avoided if the bereaved successfully negotiate the grieving process.

Anger is not generally approved of in contemporary society because it is associated with violence, hatred, and destruction. Anger does, however, have its place—it is a natural and healthy step in the grieving process. Without experiencing this vital stage, it is difficult, if not impossible, to begin to move past tragedy.
Which of the following is true according to the passage?

a. People who suffer tragedy never fully heal.
b. Crying is a natural consequence of loss.
c. Grieving individuals need therapy.
d. People should always avoid anger.
e. Grieving individuals can be self-destructive.

What is the main idea of the first paragraph?

a. Anger is the least important part of the grieving process.
b. Not moving through the anger stage of the grieving process can produce destructive consequences.
c. Depression is a normal and important part of the grieving process.
d. No-one grieves in the same way.
e. Many people do not understand the importance of anger to the grieving process.

Based on the passage, the underlined word, "cathartic," most likely means:

a. having to do with anger  
b. healthy  
c. unhealthy  
d. related to emotional release  
e. depressing

How does anger help individuals heal?

a. Anger raises immune-responses to infection.
b. Anger helps people forget grief.
c. It helps people understand that tragedy is usually blameless.
d. It allows the bereaved to more quickly enter into the "bargaining" stage of the grieving process.
e. It helps people to lash out at others.

According to Dr. Kubler-Ross' stages of grieving, an individual’s healing process begins when:

a. anger sets in  
b. blame is put on others  
c. loss is recognized  
d. the bereaved demonstrate destructive behavior