## Ásrún Jóhannsdóttir

## English in the 4th grade in Iceland Exploring exposure and measuring vocabulary size of 4th grade students


#### Abstract

The main aim of the pilot study presented in this article, was to develop and validate survey items and vocabulary tests intended to seek an answer to the question: What is the nature and size of the English vocabulary of 4th grade students in Iceland at the beginning of formal instruction? The study that is introduced in this article aims to examine the lexical proficiency of 4th grade students in Iceland at the onset of instruction, identify the factors that motivate students to learn English at this early age, and examine the amount and type of English young children are exposed to prior to beginning English studies in school. The results show that the items related to exposure to English demonstrated a high internal consistency reliability, Cronbach's $\alpha=.82$, proving reliability. Additionally, a correlation coefficient calculation demonstrates a consistency between a yes/no vocabulary size test and a Vocabulary Knowledge Scale test that validates the instruments. In addition, a significant positive relationship is established between test outcomes, on one hand, and factors such as listening to music and watching television in English on the other.


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#### Abstract

Enska í 4. bekk á Íslandi: Kynni af ensku og stærð orðaforða á ensku með̃al nemenda í 4. bekk grunnskóla Helstu markmið forkönnunnar sem greint er frá í pessari grein var að próa og forprófa spurningakönnun og orðaforðapróf sem ætlað er að leita svara við eftirfarandi spurningu: Hvað er eðli og stærð á enskuorðaforða hjá nemendum í 4. bekk á Íslandi í byrjun formlegrar kennslu? Rannsóknin sem kynnt er í pessari grein mið̌ar að pví að kanna orðaforða og færni í 4. bekk á Íslandi í upphafi kennslu til aơ greina pá bætti sem hvetja nemendur til að́ læra ensku á bessum unga aldri. Einnig aò kanna magn og tegund af ensku sem börn verða fyrir áhrifum frá áður en formlegt enskunáms hefst í skólanum. Niðurstöður sýna mikinn innri áreið̃anleika spurninga sem skoða áhrif ensku, Cronbach's $\alpha=.82$, sem sannar áreiðanleika könnunarinnar. Útreikningar sýna einnig að̀ samræmi fannst milli orðaforðaprófa sem styrkja gildi prófana auk bess sem jákvæơ tengsl fundust milli útkomu prófa, annars vegar, og hlustunar á tónlist og sjónvarpsáhorfs á ensku hins vegar.


## Introduction

In Iceland, as in many countries in the world, there is increased pressure to lower the starting age of formal English instruction (Eurydice, 2005). This notion is based on the perception that good English proficiency is a necessity to function in the modern world. Additionally, support is drawn from research carried out in bilingual and immersion circumstances where children acquire the new language faster than, for example, adults and adolescents (Nikolov \& Djigunovic, 2006; Singleton \& Ryan, 2004). The Critical Period Hypothesis (CPH) is based on the work of Lenneberg (1967), who maintained that children have a special, innate ability to acquire languages, a type of biological clock that allows natural acquisition to occur. Even though this position has been widely contested by researchers in the field, there seems to be a consensus that children who start earlier than 11-12 years of age can acquire second languages to a native level without an accent. However, native-like attainment is likely to happen only in ideal learning contexts, i.e. when there is enough input and interaction in English in the learner's linguistic environment to sustain long-term acquisition of the target language (Hyltenstam \& Abrahamsson, 2000, 2005).

In second language studies, the learning environment is traditionally divided into two contexts, a second language context or a foreign language context depending on the amount of exposure. Research on second language acquisition and bilingualism is usually conducted in second language contexts where the target language is the language of the immediate environment. The environment where the native language of the learner is spoken is considered a foreign language environment and exposure to the foreign language may only be found in the classroom (Birna Arnbjörnsdóttir, 2007; Ellis, 1994). In recent years, with the worldwide spread of English as a lingua franca, this traditional model has come under scrutiny as increased exposure has changed the status of English in many countries, such as in Iceland, from being a foreign language, towards being closer to a second language (Birna Arnbjörnsdóttir, 2007). Because of this change in exposure, many teachers believe that the English proficiency of 8-9 year old children starting 4th grade, when they are introduced to English in school, exceeds the actual English learning objectives for that level as proposed by the National Curriculum Guidelines.

It is, therefore, important to provide solid empirical evidence to inform the ongoing discussion on this global issue. At what age is it most effective to begin foreign language teaching? The main study, from which results of a pilot study are reported in this article, examines the effect increased exposure to English, has on English proficiency levels, and the children's motivation for learning English at the beginning of formal instruction in the 4th grade (Menntamálaráðuneytið, 2007).

The pilot study presented in this article demonstrates results from survey questions about students' current English use and results from two vocabulary tests, a yes/no test and a Vocabulary Knowledge Scale, examining the size of the students' lexicon. The main aim of the pilot study was to develop and validate the survey items and vocabulary tests intended to seek an answer to the question: What is the nature and size of the English vocabulary of 4th grade students in Iceland at the beginning of formal instruction?

The study has its theoretical basis in research on motivation (Csizér \& Kormos, 2009; Dörnyei, 2005; Dörnyei \& Ushioda, 2009; Nikolov, 2009); age-related studies, (LarsonHall, 2008; Munoz, 2006; Nikolov, 2009; Nikolov \& Djigunovic, 2006); and vocabulary acquisition (Daller, Milton, \& Treffers-Daller, 2007; Laufer, 1997; Milton, 2009; Nation, 2006). According to Dörnyei and Skehan (2003), motivation and aptitude are the best predictors of students' success in language learning, while age is probably the most important and most researched general factor in second language acquisition. Vocabu-
lary is logically the foundation for literacy and the building blocks of language (Grabe, 2009).

The first part of the article contains a theoretical overview of motivation, age and language acquisition, vocabulary acquisition and English in Iceland, plus a short introduction to the main study. The second part introduces the pilot study, including the participants, data collection, instruments and analysis of the results. Finally, the outcomes are discussed.

## Theoretical context

## Motivation

Research on language learning motivation has gone through considerable change since Gardner and associates in Canada first initiated and pursued the issue in 1972 (Dörnyei, 2006; Masgoret \& Gardner, 2003). Gardner \& Lambert's (1972) focus was embedded in bilingual and immersion environment with emphasis on instrumental and integrative orientation. Instrumental orientation refers to a learner's motivation to learn a language to achieve a certain goal, for example, a better job or higher grades. Integrative orientation, on the other hand, refers to a learner's positive attitude towards an L2 group, the desire to become similar to members of a L2 community, and the student's motivation to learn the language of the community. The 90s brought a change of perspectives in L2 motivational research, where the focus moved towards an approach connected more with learners' overall disposition and the classroom context (Dörnyei, 2006).

Dörnyei (2005) proposed a new conceptualization of L2 motivation that emerged from the theory of possible selves. He proposed the "L2 Motivational Self System" (Table 1) where students' learning is affected by what they could become, what they aspire to become and what they are afraid of becoming. There he suggests that through the process of language learning and in conjunction to the learners' individual differences, there are different types of selves involved depending on the time, type, amount and circumstance. Nevertheless, as pointed out by Kormos and Csizér (2008) this model is in its infancy and requires further exploration and empirical testing.

## Table 1 <br> The L2 Motivational Self-System

1. The Ideal Self - the desired outcome, for example, someone we would like to become, if that someone speaks an L2 that would encourage us to learn the L2.
2. Ought-to-Self - attributes that one believes one ought to possess to prevent negative outcomes.
3. L2 Learning Experience - situation specific motives related to the immediate learning environment and experience.

Dörnyei (2005)
Recently, motivational research looks back at Gardner's concept of 'integrative motivation' and questions the theory, as ownership of the L2, particularly English, is not clear. In the case of English, the target language, in very many cases, is learnt disassociated from any particular group or groups of speakers (Henry, 2009). English is learned by many as a lingua franca to be used to communicate with other non-native speakers. Extending the concept of integrative motivation could be done by talking about some sort of virtual identification with the socio-cultural relevance of language, rather than with the actual L2 community that speaks it (Dörnyei, 2006).

Several scholars have explored this issue of global identity or expanded L2 language identity, and how it is relevant to the global community and changing status of English as the undisputed world language (for review see Dörnyei \& Ushioda, 2009). For example, Dörnyei notes that in many technically advanced societies, English no longer holds the status of being a foreign language and therefore, instrumentality and integrativeness will inevitably overlap. Similarly, Lamb (2004) concluded that young people now develop global identities that incorporate "English-speaking globally-involved versions of themselves" (p.3). The overlap between instrumentality and integrativeness is most obvious when looking at young people and their expert use of new and emerging forms of media (Henry, 2009). By their engagement in cultural activities through the Internet, TV and computer gaming, new multilingual identities emerge.

There are not many studies that focus on motivation in the lower primary school setting, although recently we are experiencing rising interest within the field. This can be seen in a recently published collection edited by Nikolov (2009). Marianne Nikolov (2009) has found in her studies in Hungary, that children have different sources of motivation to learn English. To begin with, they have a positive attitude towards English; they enjoy the activities, and are intrinsically motivated. Older children (11-12) have extrinsic motives, such as future goals that require English proficiency even though the specific goals are vague and general (Nikolov, 1999, 2009). Further research on this matter is long overdue, especially in light of the general tendency in the world to begin foreign language education earlier and earlier (Eurydice, 2005, Nikolov, 2009).

## Age and Language acquisition

The most influential and most studied factor in language learning is the age at which a learner begins learning a second language (Larson-Hall, 2008; Munoz, 2006; Nikolov, 2009; Nikolov \& Djigunovic, 2006). The leading research on the effect of age on language acquisition is the work by Lenneberg (1967). He proposed the Critical Period Hypothesis and claimed that children have a special innate ability to acquire languages, a type of biological clock that allows natural acquisition to occur. This notion gave birth to other theories such as Chomsky's generative grammar theory that supposed a child has an innate ability known as UG (Universal Grammar) which consist of a set of principles common to all languages and facilitates language acquisition (Mitchell \& Myles, 2004).

Numerous studies on bilingual and second language acquisition show that generally the younger the learner the quicker the language learning is (for review see Nikolov \& Djigunovic, 2006). However, these early advantages seem to disappear around the age of 16 (Munoz, 2008, 2006). Younger children are more sensitive to sound and rhythm of the language. Older learners, on the other hand, have strategies that are more effective and they have a clearer sense of why they are learning. The advantages of older learners ultimately compensate for the advantages of an early start (Singleton \& Ryan, 2004).

Correspondingly, in the FL learning context, Munoz $(2008,2006)$ predicts, based on data from the BAF project in Spain, that differences between younger an older beginners will disappear once, given the same time and exposure, they reach the same state of cognitive development. In contrast, Larson-Hall (2008) reports in her study a modest difference to both phonological and basic morphosyntactic abilities in favor of a younger starting age in a minimal input situation. However, other recent studies of age and proficiency (Serrano \& Muñoz, 2007) and age, exposure and lexical knowledge (Miralpeix, 2007) show a difference in favor of learners who receive intensive exposure over those receiving the same amount of input over a longer period. Therefore, the conclusion may be that the amount and type of input is the defining factor rather than age. This illustrates
the fact that the debate concerning the early start for second/foreign language learning is not finished.

## Age and Vocabulary Acquisition

Vygotsky wrote in 1934 that "words play a central part, not only in the development of thought but also in the historical growth of consciousness as a whole" (Vygotsky, 1962, p. 153). At the beginning of this century, attention was focused on the specific events that take learners from a first meaningful encounter to the successful assimilation of a lexical item to learners' memory. Research has increasingly stressed the significance of lexis with emphasis on studying the teaching and learning of vocabulary. In other words, "vocabulary is now recognized as an essential element of learning a second language" (Ishii \& Schmitt, 2009, p. 5).

Consequently, vocabulary cannot be ignored in studies of the effects of age on language acquisition; or as Mayberry and Eichen (1991) claim, age of acquisition "exerts one effect that reverberates throughout the processing of language structure" (1991, p. 507) and this principal effect is essentially lexical. New words can be learned at any age, although the age of optimal acquisition is debatable. Nonetheless, the research on vocabulary acquisition and age demonstrates that adult and adolescent beginners acquire vocabulary more rapidly than children and that older children progress faster than younger children. However, as longitudinal naturalistic studies indicate, the younger the learner starts the better proficiency he or she attains in lexis (Singleton, 1998).

Paribakht and Wesche (1997) noted that, due to time constraints, most of a person's lexicon must be acquired incidentally rather than through direct vocabulary study. Incidental acquisition takes place when learners focus on comprehending something and unconsciously acquire something else, e.g. when they focus on general meaning or context in a text or conversation instead of explicitly learning the words that appear in that text or conversation (Paribakht \& Wesche, 1997). Children's learning is considered predominantly implicit (DeKeyser, 2000), and considerable credit has been given to incidental language learning by children from television (d'Ydewalle \& Van de Poel, 1999). However, as a recent study has shown, the vocabulary demands of television shows requires similar word knowledge as reading does (Webb \& Rodgers, 2009). Notably, the most common view is that $98 \%$ knowledge of the lexical items in a text is needed to read a wide variety of texts (Laufer, 1997, 2003; Nation, 2001, 2006). Furthermore, $95 \%$ coverage has been deemed enough for spoken discourse (Laufer \& Nation, 1999) though some suggest that 98-99\% coverage would be more appropriate (Nation \& Beglar, 2007). Nation (2006) concluded that knowledge of 3000 word families is needed to adequately understand a language.

Vocabulary knowledge is generally divided into receptive and productive vocabulary knowledge. Consequently, it is one thing to know a word and understand it and quite another to use it productively. Productive knowledge of a word is usually defined as the ability to use it in speaking or writing, while receptive knowledge is what needs to be known to understand a word while reading or listening (Nation, 2001). Receptive proficiency often develops incidentally and development of production may occur as a need or pressure to communicate. In a foreign language setting, this may be limited to the instructional setting.

Vocabulary knowledge has long been deemed a major determinant influencing ESL (English as a second language) and EFL (English as a foreign language) reading comprehension (Laufer, 1997). Given the close relationship between ESL/EFL learners' vocabulary command and their ability to understand English readings, researchers have
been searching for ways to enhance students' acquisition and retention of new vocabulary, such as by lowering the starting age of language instruction at school.

## The Icelandic Context

It has been suggested that the linguistic situation in Iceland constitutes neither a second nor a foreign language environment for English (Birna Arnbjörnsdóttir, 2007). The changing status of English in Iceland calls for a reconsideration of the effect it has on children's language learning and how we can make use of learners' possible existing English proficiency when formal instruction begins. Notably, children's access to a wide range of material in English through computers, television and movies demonstrates changed exposure to English in Iceland. However, the type and amount of that proficiency is yet to be fully explored. This exposure could be one-dimensional for young learners. That is, they may be exposed to a considerable amount of input but lack opportunity to produce output in context. A study done by Auður Torfadóttir and associates (2006), demonstrates that students in 4th and 5th grade do have some communicative production skills (Auठur Torfadóttir, Brynhildur Ragnarsdóttir, \& Samúel Lefever, 2006).

Auơur et al.'s study of the English proficiency levels of 4th and 5th grade students in Iceland revealed that, despite only a small number of students tested in conversational proficiency, many students already fulfill the goals of the National Curriculum Guidelines for 4th grade before they enter formal instruction (Auður Torfadóttir, et al., 2006). Equally important, a survey of 5th, 9th and 10th grade students' attitude towards English with students illustrates that they consider themselves rather proficient, and regard English as an important subject to study (Lovísa Kristjánsdóttir, Laufey Bjarnadóttir, \& Samúel Lefever, 2006). Furthermore, among the reasons students in the 5th grade gave for the importance of being able to know English was to be able to watch television programs and movies, play computer games, talk to foreigners and do schoolwork. Interestingly, English moves from being a subject that is a lot of fun for $70 \%$ of students in the 5 th grade to $25 \%$ in grades 9 and 10. These students are learning English at school as any other subject and have limited opportunities to practice the productive language in a real life situation. Consequently, the need and motivation to use and learn English at school is not immediately clear. Therefore, it is possible that there is a discrepancy between the type and amount of English taught in school and the type and amount of English children are exposed to outside school that may have a negative effect on motivation.

Many early English learning/teaching programs at school offer limited instructional time, often less than an hour a week or short daily sessions consisting of 10-15 minutes each session (Nikolov \& Djigunovic, 2006). This appears to be the case in Iceland as the numbers in Table 2 show:

Table 2
Average student hours* in English 1-4th grade 2005-2009

|  | $\mathbf{2 0 0 5} \mathbf{- 2 0 0 6}$ | $\mathbf{2 0 0 6 - 2 0 0 7}$ | $\mathbf{2 0 0 7} \mathbf{- 2 0 0 8}$ | $\mathbf{2 0 0 8} \mathbf{- 2 0 0 9}$ |
| :--- | :--- | :--- | :--- | :--- |
| 1. grade | $0,1\left(4 \mathrm{~min}^{* *}\right)$ | $0,1(4 \mathrm{~min})$ | $0,2(8 \mathrm{~min})$ | $0,3(12 \mathrm{~min})$ |
| 2. grade | $0,1(4 \mathrm{~min})$ | $0,2(8 \mathrm{~min})$ | $0,3(12 \mathrm{~min})$ | $0,4(16 \mathrm{~min})$ |
| 3. grade | $0,1(4 \mathrm{~min})$ | $0,2(8 \mathrm{~min})$ | $0,5(20 \mathrm{~min})$ | $0,5(20 \mathrm{~min})$ |
| 4. grade | $0,3(12 \mathrm{~min})$ | $0,4(16 \mathrm{~min})$ | $0,9(36 \mathrm{~min})$ | $1(40 \mathrm{~min})$ |

[^0]As can be seen, the amount of English instruction is minimal and never more than the equivalent of 40 minutes a week in grades 1-4. However, as Samuel Lefever (2007) reported, some schools break down those 40 minutes into 10-15 minutes, two or three times a week.

As has been mentioned, young people are experts in the use of new technology and media (Henry, 2009). Notably, numbers from Statistics Iceland (2009b) show that $92 \%$ of homes in Iceland have computers and $90 \%$ are Internet connected. Interestingly, $99 \%$ of homes with children under the age of 16 have computers in the house. Furthermore, a survey done by Capacent Gallup (2007) showed that $46 \%$ of fourth graders use the Internet daily or almost daily and $30 \%$ once or twice a week. What's more, when exploring the computer programs the children report using, many of them are in English (IMG Gallup, 2005). Therefore, it is reasonable to assume that children at that age are exposed to a considerable amount of English even though not all computer games are embedded with language.

The previously reviewed numbers indicate that incidental exposure to English in Iceland is extensive; however, whether the same applies to instructional settings as well is less known. The effect, as Birna Arnbjörnsdóttir (2007) points out, of the "exposure to highly contextual and visually enhanced input is that students develop passive (or receptive) language skills" (p.54). Later students develop production skills in colloquial language which leads them to believe that they are highly proficient, often more so than they actually are (Birna Arnbjörnsdóttir, 2007). Since it was only recently that English was included in the curriculum guidelines for young learners, the appropriateness of these goals has not been fully explored in connection to the current linguistic environment in Iceland. Nevertheless, the goals seem moderate considering that students have no problems surfing the net, playing videogames in English and participating in simple conversation before they start learning English at school (Auður Torfadóttir et al, 2006; IMG Gallup, 2005; Lefever, 2007).

Because of the changed global view, in addition to the changed educational environment in Iceland, now is the right time to study the amount and nature of exposure and vocabulary in English, specifically to explore what children experience, and what motivates them to learn English at the onset of formal instruction.

## Method

The main study applies a mixed method approach to evaluate students' lexical knowledge and identify the factors that affect students' motivation to learn English using a questionnaire, vocabulary tests and interviews. This was decided because using multiple methods where different types of data are collected can help validate each type and give more indepth results. The study focuses on vocabulary size and "sight vocabulary" knowledge and not on other aspects of language proficiency as to establish a baseline for vocabulary knowledge before formal instruction begins. Most vocabulary studies explore lexical knowledge after instruction has begun as well as the effect of teaching methods. The study is designed to explore what knowledge students bring with them at the onset of formal instruction. The main study will be administered in schools around Iceland, with between 4-500 participants depending on distribution and number of students compared to population distribution (Ásrún Jóhannsdóttir, forthcoming).

The following section presents the pilot study, the research question in focus, and the participants in the pilot study, data collection, instruments and data analysis from the current English use section of the survey and the two vocabulary tests.

## Research Questions

The focal point of the main study is to explore 4th grade students' attitudes towards English and examine which contributing factors affect their motivation for learning English, specifically learning English vocabulary. The purpose of the pilot study reported here was to test the internal consistency reliability of the item scales in the survey as well as the validity of vocabulary tests. That is, to examine the appropriateness of the testing instruments' use with this age group and explore whether they could answer the research question:

What is the nature and size of the English vocabulary of 4th grade students in Iceland at the beginning of formal instruction?

## Participants

Forty-two students in 4th grade at a primary school in Iceland took part in this pilot run at the beginning of the year 2010. This group was selected on the grounds that they started formal instruction of English in the 4th grade thus representing the start indicated by the National Curriculum guidelines. They also represent a group that is taught English by their homeroom teacher. Two participants did not have sufficient proficiency in Icelandic to be able to take part. Another was excluded due to a learning disability that prevented the participant from finishing the survey and test instruments within the allotted timeframe (40 minutes) and one for marking every single word on the yes/no test generating an adjusted score of 0 (scoring is further explained in the instrument section). Therefore, answers from 38 students ( 15 boys and 23 girls) were used in the statistical analysis. Five students ( 4 boys and 1 girl) reported having lived in a country where English is the main language from 2 to 7 years. These students' responses were included because this demonstrates diversity in the sample. The average age of participants in this sample was 9.2 years.

## Instruments

The three variables under investigation in this analysis are: English exposure, vocabulary size and sight vocabulary. These variables were measured, respectively, by 14 survey items focused on current English use, a yes/no vocabulary test and a Vocabulary Knowledge Scale test.

## Survey questionnaire

The survey questionnaire is designed to answer the research questions pertaining to attitude, motivation, and type and amount of exposure. The pilot run was done with a survey that included 48 items concerned with attitude and exposure based on Dörnyei's "L2 Motivational Self-System" as well as other relevant research on motivation (Csizér \& Kormos, 2009; Dörnyei, Csizér \& Németh, 2006; Kiss \& Nikolov, 2005; Lovísa Kristjánsdóttir, et al., 2006). The questionnaire adopts statements from previously used instruments used in Hungary and Iceland but order, setup and language is arrange by the researcher (Ásrún Jóhannsdóttir, forthcoming). Due to the instruments' use with children under the age of 10 , the answer choices are condensed as a means to avoid fatigue effects (Dörnyei, 2003). In addition, visual representation with emoticons such as © and © was provided (see Appendix for example). Participants indicated their answer by marking one of the choices: Often, sometimes, seldom, never.

For example:
I want to use English to be able to speak English in foreign countries (choices: often, sometimes, seldom, never)

This question explores the ideal self as well as the degree of need students have for learning English.

The 14 survey items presented in this article were designed to explore the type and amount of exposure. For example,

1. I use English on the Internet (chat, msn, MySpace, Facebook etc.)
2. I read books in English.
3. I watch television programs and/or movies in English.

These questions examine the L2 environment, suggest the need for English as well as demonstrating a level of media influence, depending on the outcome. Subsequently, the items indicate the nature and amount of English $4^{\text {th }}$ grade students are exposed to.

## Vocabulary tests

The first vocabulary test chosen is a yes/no vocabulary size test set up in similar fashion as Meara \& Milton's X_Lex (Milton, 2009). Additionally, for the second vocabulary test, students were offered the choice of providing the meaning of the word in Icelandic in the tradition of Paribakht and Wesche's Vocabulary Knowledge Scale (Paribakht \& Wesche, 1997, 1999). These types of tests have proved to be reliable in assessing students vocabulary size (Milton, 2009) although this has not been fully tested with this age group. Giving students the choice of providing meaning will be an indication of their understanding as well as providing validity, by exploring the internal correlation between the tests and the test items. In both cases, adaptations (see further discussion below) are made to accommodate the age and cognitive growth of the participants in the hope of acquiring reliable results.

## Yes/no Vocabulary test

Firstly, a yes/no test was chosen due to its user-friendly approach in addition to having the reputation of correlating well with global proficiency tests (Eyckmans, 2004; Milton, 2009). In the test, participants are presented with a list of words. They are to mark the word items they believe they have seen or know and leave out unfamiliar word items. Many variations of this type of test have been used in research and the amount of word items has changed. Meara \& Milton's X_Lex includes 120 words, 20 randomly selected from the first five 1000 frequency bands from the British National Corpus and 20 pseudowords. The pseudo-words allow the score on the real words to be adjusted for guessing and over-estimation of knowledge (Milton, 2009).

For this study the yes/no test format was retained but the frequency list used is from Word Express: the first 2500 words in spoken English (Stemach \& Williams, 1988). This list is derived from samples of spontaneous language of over 500 native English-speaking children, over 700.000 running words. 100 words were randomly selected to represent the first 5 strands (each strand contains 250 words, 1250 total), 20 words for each strand and 20 pseudo-words, borrowed from X_Lex (Milton, 2009) added to the mix, making the total of words 120. Students were instructed to mark the words they had seen or they knew and were told about the existence of the bogus words. Vocabulary knowledge size is then calculated by counting the number of Yes responses and multiplied by 12.5 to give the raw score out of 1250 . The number of pseudo-words is then calculated and multiplied by 62.5. This total is then subtracted from the raw score to give an adjusted score, also out of 1250, thus compensating for guesswork.

## The Vocabulary Knowledge Scale

Secondly, tests like the Vocabulary Knowledge Scale (VKS) eliminate the guessing factor. This test was chosen both due to its diverse response approach and because it is
organized in the same self-reported manner as the motivational scales and the exposure questions. In addition, it has been observed that the instrument taps into the early stages of vocabulary learning (Schmitt, 2010). The original instrument uses a 5-point scale combining self-report and performance items to produce self-perceived and demonstrated knowledge of specific words in written form. The scale ratings range from complete unfamiliarity, to recognition of the word, some idea of its meaning to being able to use the word in a sentence. Learners are presented with a list of target words and asked to indicate their level of knowledge for each, and, for levels iii-v, to demonstrate "sight vocabulary" knowledge (Paribakht \& Wesche, 1999; Read, 2000). A "sight vocabulary" knowledge means that the knowledge is so familiar to the person that they can understand the item out of context (Laufer \& Ravenhorst-Kalovski, 2010).

From the 100 word-list used with the yes/no test, 25 words ( 5 for each strand) were randomly selected for an adapted VKS test. For this study, the first four levels are adopted and students choose one of the four options to answer (see Table 3). If they answer either III or IV, they are to provide a translation into Icelandic to measure their "sight vocabulary' knowledge of the set items. Although these two choices indicate knowledge if correct there is a different degree of familiarity. Scoring was done on the scale of 0-3 producing scores between 0 and 75 .

|  | Table 3 |
| :---: | :--- |
|  | The VKS test (Paribakht \& Wesche, 1997, 1999) |

All instruction and examples were in Icelandic to ensure that the students understood what to do, and in all cases adaptations, that is to say the previously mentioned age appropriate word list and excluding level V from the VKS, are made to accommodate the age and cognitive growth of the participants in the hope of acquiring reliable results.

## Pilot results

The focus of this analysis is to examine the testing instruments in connection to the research question. First, the results from the internal consistency reliability analysis for the 14 survey items concerned with exposure or participants' perceived use of English and from the two vocabulary tests will be reported. Then, the descriptive results from the item scale and tests will be presented. All calculations were done using the PASW (formerly SPSS) software.

The 14 items related to exposure and use of English demonstrated a high internal consistency reliability, Cronbach's $\alpha=.82$. Additionally, the yes/no vocabulary test demonstrated Cronbach's $\alpha=.95$ and the VKS $\alpha=.94$.

A Pearson correlation coefficient was calculated. Table 4 displays the correlation between vocabulary tests. In addition to calculating the two vocabulary tests (Yes/no and VKS) an additional calculation was conducted. For this additional calculation the 25 VKS words were extracted from the yes/no test and scoring calculated according to the yes/no for-
mula. All test and calculated results show a high positive relationship between each test, demonstrating that a participant scoring high on one test scored high on the other as well.

| Table 4 |  |  |  |
| ---: | :---: | :---: | :---: |
| Vocabulary tests correlation coefficient |  |  |  |
|  | Yes/No <br> vocabulary <br> test | Vocabulary <br> knowledge scale | VKS items from <br> Yes/no test |
| Yes/No vocabulary <br> test total 1250 | 1 | $.911^{* *}$ | $.974^{* *}$ |
| Vocabulary <br> Knowledge Scale <br> total |  | 1 | $.934^{* *}$ |
| VKS items from <br> Yes/no test |  |  | 1 |

** Correlation is significant at the 0.01 level (2-tailed).
Next we look at the questionnaire items and Table 5 presents means and standard deviation for each of the 14 items from the reported English use part of the survey as well as frequency of answers in percentages in Table 6. Response scale is 1-4, 1 meaning

| Table 5 <br> Motivational Questionnaire Items, Reported English Use: Mean and standard deviation |  |  |  |
| :---: | :---: | :---: | :---: |
| Item | N | Mean | Std. Deviation |
| 1. I read books in English. | 38 | 1.71 | . 867 |
| 2. I watch TV shows and/or movies in English. | 38 | 3.35 | . 853 |
| 3. I speak English to foreigners in Iceland. | 38 | 2.13 | 1.165 |
| 4. I have used English while traveling to foreign countries. | 38 | 2.41 | 1.173 |
| 5. I speak English to my parents. | 38 | 1.61 | . 855 |
| 6. I use English on the Internet (chat, msn, MySpace, Facebook etc.). | 38 | 2.12 | 1.195 |
| 7. I use English to play computer games on the Internet (club penguin, Farmtown, pet society, Runescape etc.) | 38 | 2.71 | 1.228 |
| 8. I use English to play video games on a game computer (PlayStation, Wii, x-box etc.). | 38 | 2.95 | 1.162 |
| 9. I listen to music with English lyrics. | 38 | 3.24 | . 883 |
| 10. I read or look at magazines and papers (i.e. comics) in English. | 38 | 2.21 | . 905 |
| 11. I use English at school. | 38 | 2.58 | . 889 |
| 12. I speak to my friends in English. | 38 | 1.79 | . 807 |
| 13. I play computer games in English with my friends. | 38 | 2.74 | 1.131 |
| 14. I speak English to my family (other than my parents). | 38 | 1.83 | 1.003 |

never and 4 meaning often. Notably, question 2 (I watch TV shows and/or movies in English) $\mathrm{M}=3.35$ and question 9 (I listen to music with English lyrics) $\mathrm{M}=3.24$ reporting a higher current English use through these channels.

The percentages in Table 6 demonstrate the pattern mentioned above divided by answer choice, where $52.6 \%$ of participants report watching TV/movies in English often and $34.2 \%$ sometimes and $50 \%$ listen to music with English lyrics often and $26.3 \%$ sometimes.

| Table 6 <br> Motivational Questionnaire Items, Reported English Use: Response type frequency |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Item Frequency in percentages |  |  |  |
| Item | Often | Sometimes | Seldom | Never |
| 1. I read books in English. | 2.6\% | 18.4\% | 26.3\% | 52.6\% |
| 2. I watch TV shows and/or movies in English. | 52.6\% | 34.2\% | 7.9\% | 5.3\% |
| 3. I speak English to foreigners in Iceland. | 18.4\% | 21.1\% | 26.0\% | 39.5\% |
| 4. I have used English while traveling to foreign countries. | 23.7\% | 13.2\% | 34.2\% | 26.3\% |
| 5. I speak English to my parents. | 26.0\% | 15.8\% | 21.1\% | 60.5\% |
| 6. I use English on the Internet (chat, msn, MySpace, Facebook etc.). | 21.1\% | 13.2\% | 26.0\% | 44.7\% |
| 7. I use English to play computer games on the Internet (club penguin, Farmtown, pet society, Runescape etc.) | 39.5\% | 15.8\% | 21.1\% | 23.7\% |
| 8. I use English to play video games on a game computer (PlayStation, Wii, $x$-box etc.). | 44.7\% | 23.7\% | 13.2\% | 18.4\% |
| 9. I listen to music with English lyrics. | 50.0\% | 26.3\% | 21.1\% | 26.0\% |
| 10. I read or look at magazines and papers (i.e. comics) in English. | 10.5\% | 21.1\% | 47.4\% | 21.1\% |
| 11. I use English at school. | 15.8\% | 36.8\% | 36.8\% | 10.5\% |
| 12. I speak to my friends in English. | 5.3\% | 7.9\% | 47.4\% | 39.6\% |
| 13. I play computer games in English with my friends. | 34.2\% | 23.7\% | 23.7\% | 18.4\% |
| 14. I speak English to my family (other than my parents). | 10.5\% | 10.5\% | 28.9\% | 50.0\% |

Table 7 demonstrates the means and standard deviations for the two vocabulary tests as well as the additional calculation of the 25 VKS words in the Yes/No test. The numbers are divided between number of words marked and scores according to the previously mentioned formula. Yes/no scoring is out of 1250 using 100 words, counting the number of Yes responses and multiplied by 12.5 to receive the raw score out of 1250. Pseudo-
words are then counted and multiplied by 62.5. This total is subtracted from the raw score to give an adjusted score, also out of 1250. The VKS score is out of 75 using 25 words, item rating scale 0-3.

Additionally the score of the VKS words within the Yes/no test were extracted and scoring calculated according to the yes/no formula. Therefore, the VKS items from yes/no test generate a scoring out of 312.5, 25 words. Looking closer at the mean number of words, the words used for the VKS are almost equally identified in the yes/no test as they are identified or translated in the VKS with similar distribution.

| Vocable 7 <br> for number of words and calculated scores |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
|  | N | Mean <br> number <br> of words | SD number <br> of word | Mean <br> score | SD score |
| Yes/No <br> vocabulary test <br> total 1250 | 38 | 54.32 | 26.57 | 678.95 | 332.11 |
| Vocabulary <br> Knowledge Scale <br> total | 38 | 15.16 | 6.47 | 45.47 | 19.40 |
| VKS items from <br> yes/no <br> vocabulary test | 38 | 14.87 | 6.54 | 185.86 | 81.74 |

Table 8 displays the raw scores from the vocabulary tests divided by strands, building up a profile demonstrating the mean knowledge of participants in this sample. The yes/no test top score for each strand is 250 , using 20 words, the VKS top score per strand is 15 , using 5 words and the VKS items extracted from the yes/no test generate a top score of 62,5 per strand, using 5 words.

| Table 8 |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Vocabulary test calculation divided by strands: |  |  |
| Means and standard deviation |  |  |  |
| Vocabulary test | Yes/no <br> knowledge <br> scale | VKS items <br> from Yes/no <br> test |  |
| Strand 1 | $161.2(67.4)$ | $11.9(3.99)$ | $50.0(15.91)$ |
| Strand 2 | $165.8(57.6)$ | $10.0(3.98)$ | $39.8(16.14)$ |
| Strand 3 | $125.0(76.0)$ | $8.3(4.98)$ | $35.9(19.31)$ |
| Strand 4 | $115.5(67.7)$ | $6.9(4.06)$ | $29.9(19.82)$ |
| Strand 5 | $111.5(75.6)$ | $8.2(4.52)$ | $30.3(19.85)$ |

Standard deviation is presented in brackets.
It can be seen that there is a declining pattern in all profiles, suggesting that participants recognize and know more words from the first strand than the fifth. Distribution of scores is high in all cases, suggesting a considerable range of skill level of participants in this sample.

Finally, when exploring correlation between the vocabulary tests and the questionnaire items a significant positive relationship was found between tests and a few items in this sample. This was found between vocabulary test results and items pertaining to listening to music with English lyrics ( $\mathrm{r}=.61, \mathrm{p}<.001$ ) on one hand and between test results and watching television or films in English ( $r=.52, \mathrm{p}<.001$ ) on the other. A correlation between the two items (watching and listening) showed a statistically significant relationship ( $r=$ .46, $p<.001$ ) as well. Relationships between other items from this section of the survey (current English use) and vocabulary test results did not prove statistically significant in this pilot sample. The implications demonstrated in these results will be further discussed below.

## Discussion

The pilot study presented here aimed to test reliability and validate the survey items and vocabulary tests used to answer the research question: What is the nature and size of the English vocabulary of 4th grade students in Iceland at the beginning of formal instruction?

Firstly the high internal consistency reliability scores (Cronbach's alpha) prove reliability for both the 14 survey items and the vocabulary tests. Likewise, the high significant relationships between vocabulary tests further support their validity. Furthermore, interviews conducted after the testing period demonstrated that students understood the questionnaire as well as the vocabulary tests. What we have found from this pilot run is that there is high consistency between the vocabulary tests, which seems to indicate that students are honest in their answers as well as providing validity and reliability to the testing instruments. The pattern observed in Table 8 is also consistent with profiles that have emerged from outcomes of yes/no tests done with 10 year old children (and older) in Greece and Hungary (Milton, 2009; Orosz, 2009). This pattern will be further explored and discussed in the main study (Ásrún Jóhannsdóttir, forthcoming).

Although this was a pilot run to examine the strength of the instruments there are some indications to be discussed in connection to the research question. Can we explore where the vocabulary comes from by looking at these results? The results from the questionnaire items support what the numbers from IMG Gallup (2005) and Statistics Iceland (2009b) show, i.e. that students feel they are exposed to English through media, the TV, music, the Internet and games, though more from the first two in this sample. Additionally, the results from the vocabulary tests show that despite limited formal instruction these students demonstrate knowledge of 54 word items on the yes/no test producing the score of 687 on average of the first 1250 spoken words list plus translating 15 word items, which is more than half of the 25 words in the VKS test (see Table 8). Nevertheless, it must be noted that scores were very diverse, demonstrating a high degree of individuality.

Markedly, the correlation demonstrated a positive relationship between self-reported exposure to English through music, television and movies, and the outcome of the vocabulary tests. This could further support the argument that participants are learning incidentally from these media, just as their feeling seems to be. This will be explored further in the main study but looking briefly at the correlation, it is, as thought, television and music that dominate their English experience, a highly contextualized receptive exposure, as Birna Arnbjörnsdóttir has mentioned (2007).

A question of the validity of using a text based vocabulary test for this age group has been raised. That is, given that a considerable amount of the exposure children experience is visual and sound based input, the question is: should a written text format be used to test vocabulary knowledge? This is a very relevant question when we look at the
proposed vocabulary knowledge and skill needed to read a wide variety of texts. However, to inform the current discussion on vocabulary testing, and considering that this type of test has been used and validated for other age groups, we need to follow the design as closely as possible to maintain reliability of results. The purpose of the vocabulary tests is to measure children's base knowledge of the word items as well as their "sight vocabulary". It is not the purpose of this study to measure the complete range of vocabulary knowledge. Notably, it has been illustrated that no vocabulary test is available or capable of measuring the complete range of vocabulary knowledge (Schmitt, 2010). Additionally, the issue of understanding did not arise in the pilot run. When we consider that students are exposed to written input through the Internet and computer games, as well as spoken input from games and TV, administering these tests will inform the educational environment in Iceland of the ability of the students.

## Conclusion

The changed linguistic environment in Iceland and around the world, plus the question of the age when it is most effective to begin foreign language teaching, demand solid empirical evidence to inform the ongoing discussion on this global issue. The appropriateness of testing instruments has to be explored and tested in order for them to adequately test the intended subject or question. The results from this small sample concur with other surveying and testing that has been done with this age group in Iceland. This continues to imply that the knowledge and ability of at least some young learners in Iceland have moved past the goals set for this age group in the National Curriculum guidelines.

Although the results from the pilot study cannot be assumed to demonstrate general knowledge of 4th grade students in Iceland, the Cronbach alpha and relationship statistics support the use of the instruments to further explore the question of exposure and vocabulary knowledge. Likewise, the reliability scores demonstrate that students are being as honest as they can be in their reports. The implications emerging from the numbers above will be explored further in the main study conducted during the school year 2010-2011.

In the attempt to map out the lexical proficiency of 4th grade students in Iceland, I hope that the results of the main study will shed light to the linguistic environment of children in Iceland. Secondly, I hope that the study will inform the field of vocabulary testing as well as contributing to mapping out the motivational factors that affect students' language learning, particularly at this young age. Thirdly, the study will contribute to the ongoing work that is being done within the field of vocabulary testing, particularly the testing of young children, in addition, within motivational research. Finally, it will inform foreign/ second language education policy and provide insight into how we can better meet the needs of Icelandic learners at the onset of formal instruction.

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[^1]
## Appendix

## Questionnaire item example

Hvenær notar pú ensku núna (til að̃ tala/skrifa/lesa/hlusta)? (merktu X við dálkinn sem passar best vio pig)

|  | $\begin{aligned} & \hline \text { Oft } \\ & \oplus \\ & 4 \end{aligned}$ | $\begin{gathered} \text { Stundum } \\ 3 \end{gathered}$ | $\begin{gathered} \text { Sjaldan } \\ 2 \end{gathered}$ | Aldrei © 1 |
| :---: | :---: | :---: | :---: | :---: |
| 1. Ég les bækur á ensku. |  |  |  |  |
| 2. Ég horfi á sjónvarpspætti og/eঠ̌a bíómyndir á ensku. |  |  |  |  |
| 3. Ég tala ensku viơ útlendinga á íslandi. |  |  |  |  |
| 4. Ég hef notaơ ensku á ferठัalögum í útlöndum. |  |  |  |  |

## Yes/no vocabulary test example

Pekkir pú orðin?
Hér fyrir neðan eru nokkur orð í ensku, sum eru alvöru ensk orð og sum eru bullorð. Merktu bara við pau orð sem pú veist að pú hefur séð eð̃a pekkir eins og sýnt er í dæminu sem er á undan.

Dæmi: $\quad$| dog | X |
| :--- | :--- |

| Again |  | black |  | Scream |  | freeze |  | dragon |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| brother |  | bounce |  | Hyslop |  | fight |  | window |  |
|  |  |  |  |  |  |  |  |  |  |

## VKS test example

Kannt pú pessi orð?
Nú koma 25 orð sem pú ert beðin að skoða og merkja með X eða skrifa merkingu á feitletruðu orðunum í dálkinn (bað á bara að setja $X$ eða skrifa einu sinni fyrir hvert orð).

## 1. Brother

| I. Ég man ekki eftir að hafa séð petta orð áđur |  |
| :--- | :--- |
| II. Ég hef séð petta orð áđur en man ekki hvað pað pýđir |  |
| III. Ég hef séð petta orð áður og held að pað pýđi ... Skrifið í dálkinn |  |
| IV. Ég veit hvað petta orð pýđir. Pað pýđir ... Skrifið í dálkinn |  |


[^0]:    *A student hour equals 40 minutes per week. ${ }^{* *}$ min $=$ minutes

[^1]:    Ásrún Jóhannsdóttir. (2010)
    English in the 4th grade in iceland : Exploring exposure and measuring vocabulary size of 4th grade students Ráð́stefnurit Netlu - Menntakvika 2010. Menntavísindasviơ Háskóla Islands.
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