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Icelandic Vocabulary

Abstract

Since 2000, there has been a steady decline in the reading comprehension performance on the *Programme for International Student Assessment (PISA)* (OECD, 2017) for Icelandic adolescents (Directorate of Education, 2017; Ólafsdóttir & Sigurðsson, 2017). No participating country has demonstrated a sharper drop in mean scores on this measurement. Icelandic educators are concerned that the large number of adolescents who demonstrate poor performance are not mastering advanced Icelandic vocabulary, as that is a key variable that explains their low achievement (Birgisdóttir, 2016). Consistently, Icelandic vocabulary has emerged as a strong influencing factor on the rate of growth in reading comprehension over the middle school years among pupils with Icelandic as a first and as a second language (Ólafsdóttir, Birgisdóttir, Ragnarsdóttir, & Skúlason, 2016).

Our goal was to provide high school pupils opportunities to enrich their academic vocabularies. Few research projects have focused on high school (versus younger) students' learning of vocabulary. We hope that the global context of this research will be of interest to many practitioners and scholars.

This project, a collaboration among teachers and teacher educators, was initiated by Icelandic educators. The focus was to advance the pedagogy of high school teachers with the aim of advancing the vocabulary and reading comprehension of their students. We offered specific literacy professional development with Icelandic teachers from multiple disciplines. Research on effective professional development (PD) for teachers of reading (Laster & Finkelstein, 2016; Sailors, 2009) framed this project.

Icelandic Vocabulary

This article reports on the impact on students, as evidenced in their achievement scores. Our research question was the following: Will teacher professional development have an impact on adolescent students' Icelandic vocabulary and reading comprehension?

Explicit Vocabulary Instruction and Teacher Professional Development

As schools have a central role in preparing all learners to become active citizens in society, one component of extending students' capacity as citizens is developing mature use of academic language (Uccelli, Barr, Dobbs, Galloway, Meneses, & Sánchez, 2015; Uccelli, Phillips Galloway, Barr, Meneses, & Dobbs, 2015). Uccelli and colleagues term this proficiency *core academic language skills* (CALs), the knowledge of high-utility language fundamental for the development of reading comprehension of academic texts required across the wide range of school content areas; language generally not used in daily conversations.

Decades earlier Beck, McKeown, and McCaslin (1983) emphasized the significance of words used in school texts, Tier 2 and Tier 3 words, that are needed in order to use speaking and written language for adult concepts and interactions. Tier 2 words are those advanced vocabulary words that are used in multiple disciplines (e.g., *function, design, trajectory, catalyst*), by mature language speakers, and in written texts of various kinds (printed or digital). Tier 3 words are those specific to a subject (e.g., *photosynthesis, simile, isosceles, veto*) and play a major role in disciplinary content.

Researchers have shown that effective instruction for vocabulary learning should be vigorous, strong, and powerful (Beck, McKeown, & Kucan, 2013; Lawrence, J. F., Francis, D., Paré-Blagoev, J. & Snow, 2016). Specifically, vocabulary learning involves activities that are thought-provoking, interactive, and playful. Teachers who have a focus on effective vocabulary instruction demonstrate direct explanation of the new concept words, along with activities that

Icelandic Vocabulary

use words as tools for communication and thinking about disciplinary content (Nagy, Townsend, Lesaux, & Schmitt, 2012).

Implicit acquisition of new vocabulary through oral communication and reading can occur but explicit instruction has proven to be more effective (Laufer, 2016). Laufer found that from reading alone 38% word learning can occur even though words appear six to nine times in a read text. From reading and using a dictionary, the effect can go up to 55% with only two to three occurrences in the text. Providing students with interactive activities for target words can lead to 75% word learning, even though the target words appear only two to three times in a text. An explicit approach to vocabulary learning involves making learners attentive to words in a text, giving them opportunities to use the words frequently as a means to eventually add them to their lexicon. Multiple activities include finding synonyms, antonyms, multiple meanings, doing crosswords, fill in the blanks, discussions, and writing (Laufer, 2016; Peters, Hulstijn, Sercu, & Lutjeharms, 2009).

In fact, learners are three times more likely to learn vocabulary if they are given opportunities to use target words themselves in sentences, as compared to answering comprehension questions requiring an understanding of the words (Laufer & Hill, 2003). It is essential for teachers to provide students with strategies to detect word meanings by dividing words into smaller word units (Uccelli, Phillips, et al., 2015).

Furthermore, research has shown that students who gain knowledge of key words (Tier 2 and Tier 3) improve their text comprehension (Beck, McKeon, & McCaslin, 1983). The well-known *Word Generation program* with explicit focus on academic vocabulary across disciplines has proven successful in increasing students' reading comprehension (Lawrence, et al., 2016). Kieffer and Lesaux (2010) demonstrated that skills in decomposing morphologically complex

Icelandic Vocabulary

words are important contributors to reading comprehension. Others have examined the nature of academic language and conceptual learning in content disciplines (Nagy, et al., 2012; Uccelli, Barr, et al., 2015).

Moreover, there is a growing body of research on effective professional development (PD) for teachers (Kennedy, in press). Effective PD contains a focus on teachers' contexts and the particular needs of their students. It also reflects the best research on the given topic, in this case vocabulary instruction. Furthermore, PD activities should mirror what the teachers do for instruction in their classrooms (Garet et al., 2001; Hawley & Valli, 2007). Cultural and institutional contexts for PD must be a part of the design of PD (King & Newmann, 2001), and there is benefit in including both insider (e.g., school or district-based) and external expertise among PD facilitators (Lyons & Pinnell, 2001).

Cultural Context: Icelandic Language Strength and Preservation

Since 2000, there has been a steady decline in the reading comprehension performance on the *Programme for International Student Assessment (PISA)* (OECD, 2017) for Icelandic adolescents (Directorate of Education, 2017). No participating country has demonstrated a sharper drop in mean scores on this measurement. There is a concern that adolescents who demonstrate the poorest performance are not mastering Icelandic vocabulary, as that is a key variable that explains the decline in PISA scores (Birgisdóttir, 2016). Consistently, Icelandic vocabulary has emerged as a strong influencing factor on the rate of growth in reading comprehension over the middle school years among pupils with Icelandic as a first and as a second language (Ólafsdóttir, 2016).

Icelandic is the official and historic language of Iceland. The majority of the population of only 355,000 people (Statistic Iceland, n.d.) speak it as a maternal language, and 10% as a

Icelandic Vocabulary

second language. Whether as a first or a second language, the Icelandic people use the language to achieve their personal goals, throughout their academic schooling, and to actively participate in Icelandic society. Moreover, Icelandic literature is a core component of the country's culture (Hólmarsdóttir, 2001). Icelanders have throughout the generations been read to by their parents and their teachers, and they have read independently from a young age. In fact, Reykjavik is known as a UNESCO city of literature (UNESCO, n.d.).

The Icelandic language is a Germanic language (Árnason & Pind, 2005). The oldest manuscripts written in ancient Icelandic date from the 12th century. However, in these manuscripts, known as sagas, there are references to older Icelandic texts from the 9th century. From these resources it is evident that the Icelandic language was already a language of literature when Iceland was first settled in the year 874.

In the 14th century, Iceland was colonized by Denmark. The Danish influence on Icelandic was evident in the increased use of Danish words. According to Kvaran (2005), Arngrímur Jónsson hinn lærði (E. *the educated*), a scholar in the 16th century, encouraged Icelanders to preserve the language and to strive against the use of Danish words.

In the 19th century, Rasmus Kristján Rask influenced others in the field of linguistics when he asserted that Icelanders should not adopt Danish words for new concepts, but rather new Icelandic words should be created. He argued that in order for the language to be preserved, new words should be created by combining words, word parts, and affixes.

Unlike many other contemporary societies, the Icelanders adopted Rask's policy and have until this day invented new words for new concepts instead of taking words from other languages (Kvaran, 2005). Whereas English technological words have been readily adopted into some other languages (e.g., *radio, computer, TV*), this is not true in Icelandic as there has been a

Icelandic Vocabulary

concerted effort to create new Icelandic terms (Hólmarsdóttir, 2001). For example, the word *computer* in Icelandic is *tölva*: *töl-* is a root for the word *tala* (E. *number*) and *-va* is a suffix to make the word into a new noun. Thus, Icelanders have managed to preserve and cultivate their language to align with changes and developments in the world.

Even though Icelandic literature has throughout the centuries played a significant role in the Icelandic culture (Pálsson, 1989), little attention has been paid to explicit reading comprehension instruction for children in school. Nor did teachers explicitly teach word consciousness to constantly enlarge learners' Icelandic vocabularies (Ólafsdóttir, 2015). Based on the fact that in the year 2000, Icelandic learners' reading comprehension was equivalent to the average OECD mean scores (Directorate of Education, 2017) it can be suggested that Icelanders previously developed their reading comprehension skills and simultaneously their Icelandic vocabularies via the cultural norm of reading.

A possible reason for the sharp decline in reading comprehension performance on *PISA* since 2000 among Icelandic participants is their increased use of English in digital spaces. A recent study (The Icelandic Centre for Social Research and Analysis, 2016) revealed that the majority of Icelandic teenagers spend several hours on the internet every day. National surveys, interviews, and diary studies have demonstrated a rich and persistent use of English in Iceland by children and adults via the media (Arnbjörnsdóttir, 2018; Arnbjörnsdóttir & Ingvarsdóttir, 2018; Lanvers, 2016). The younger the Icelandic respondents the more likely they were to use English daily for several hours. Thus, their language skills are possibly divided between the two languages (Oller & colleagues, 2007), perhaps leading to less Icelandic proficiency. At least, it is certain that time spent in English is not time spent on reading Icelandic texts. This is worth

Icelandic Vocabulary

considering as language skills, and in particular vocabulary, develop the best from reading (Grabe & Stroller, 2002; Nagy, Anderson, & Herman, 1985).

Whether Icelandic, and other indigenous or national languages, can survive in the face of the English-oriented internet and English-centered global media is of great concern to many speakers of cultural languages (Rögnvaldsson, Jóhannsdóttir, Helgadóttir, & Steingrímsson, 2012). In fact, the world as a whole is witnessing a digital revolution which has been compared to Gutenberg's invention of the printing press. Many of the world's 6000 languages are at risk to vanish, it is estimated that at least one third are doomed to extinction. The status of languages will depend not only on the number of its speakers, or published books, films and TV stations, but also on the presence of each language in the digital world. The Icelandic language is of particular interest due both to the small size of the Icelandic population and the shortage of digital materials in Icelandic (Rögnvaldsson, et al., 2012).

The preservation of the Icelandic language is best accomplished when Icelandic speaking people understand and use Icelandic words. Not only past generations but future generations of Icelanders need to master advanced nuances of vocabulary in the Icelandic tongue to understand Icelandic literature in print and digital texts.

Methodology

In this experimental study, the intervention took place over one school year. Educators in every grade were interested in our work, yet for this particular year (2017-2018) the focus was on the learning of vocabulary by 10th graders.

Participants

Icelandic Vocabulary

This study was open to 10th graders that were both native and non-native Icelandic speakers. Of the students who participated, 10% had Icelandic as a second language. Permission was first obtained from the school district, which has a long-established mission of equity, inclusion, and diversity. The schools were then selected randomly from three categories, according to their standardized test scores in Icelandic language: the highest, the middle, and the lowest. Principals in six schools agreed to participate in the study: Three schools were designated as experimental and three were designated control schools. The control schools fully represented the three categories of achievement. One experimental school, School 1, represented the highest performing schools. Another experimental school, School 2, represented the middle performing schools. The principals of the experimental schools encouraged teachers representing various disciplines to participate in the professional development activities. The teachers from the third experimental school participated in the professional development activities in August, but withdrew from the project in the fall as they claimed that their pupils were too difficult, with a range of special disorders. The researchers tried to convince them of possible benefits, without success. Thus, no data were available from the lowest category of experimental schools.

Teachers are required to attend some professional development; however, it was their own choice if they decided to be part of this project. Teachers of Social Studies and Icelandic Studies participated in the August workshops ($n=14$). Even though the August workshops included teachers from one school who, as a group, later dropped out of the study, the number of teachers who participated increased over the course of the school year. From the two remaining experimental schools most Icelandic Studies teachers participated, as well as most Social Studies teachers. Furthermore, by October we added teachers of science, mathematics, life studies (ethics and communication), an art teacher, and a special support teacher. Thus, a variety of disciplines

Icelandic Vocabulary

were represented among the teachers who participated from the two experimental schools ($n=19$).

The intervention with students was done with whole classes of students; 140 pupils in School 1, and 70 pupils in School 2. However, parents' consent was needed for pre- and posttests, which resulted in 115 participants in School 1 and 42 in School 2; total $n=157$ students from the experimental schools. Students from the control schools (who took pre- and posttests) were as follows: School 3 had 41 participating pupils; School 4 had 28 pupils; and School 5 had 19 pupils; a total $n=88$ participants from the control schools. Some students missed some of the tests because of absences, so there were a few missing cases in the results, as seen below. Native Icelanders made up 90% of the student participants; 10% of the students had other maternal languages.

Procedures

PD intervention for 10th grade teachers of the experimental schools.

At the beginning of the intervention, in August 2017, there were two days of workshops that provided professional development facilitated by the second researcher. The objective was to provide teachers from the experimental high schools with effective ways to build the Icelandic vocabulary of students and to promote word consciousness. Furthermore, we encouraged the participants to meet with colleagues from the same school to design ways to have vocabulary learning across subject areas as a schoolwide focus. We suggested, for example, that there could be *a word per week* that was emphasized within the whole school in multiple ways. Furthermore, we spent some time in small groups across schools divided by subject disciplines.

Teachers learned or reviewed the theoretical rationale for the underlying instructional activities, and actively participated in a range of vocabulary instructional activities that focused

Icelandic Vocabulary

on Icelandic language. Teachers participated in interactive workshops in which they practiced using many instructional strategies aimed at mastery of Tier 2 and Tier 3 words via multiple exposures. Specifically, we modeled, gave examples, and had teachers actively practice: use of context clues, Frayer model (Frayer, Frederick, & Klausmeier, 1969), *Visualizing and Verbalizing* (Bell & Lindamood, 1991), word sorts (Temple & Gillet, 1978), generating sentences, identifying roots and affixes, and multimodal activities, such as games and digital resources (e.g., *Kahoot!*).

In September of the same year, pretests (vocabulary and reading comprehension measurements, see below), were administered to experimental and control students.

In October, a gathering was held in the two experimental schools, separately, at which teachers and the first researcher discussed the interventions and got feedback. These meetings were attended by all teachers of various disciplines, and some of them decided to join the project. In January, teachers in the experimental schools participated in a second set of workshops. This built on feedback from the teachers, as they asked for further practice with the approaches that were introduced in August. Within the January session, we also situated vocabulary instruction within the larger frame of reading comprehension (e.g., metacognition, visualizing, predicting and confirming). This was followed by discussions and evaluations of the workshops.

Follow up PD supports. We provided follow-up support to the teachers throughout the school year, from September through April with occasional meetings and regular e-mail exchanges. Furthermore, the principal researcher made word packets that she provided to the participating teachers (including both Tier 2 and Tier 3 words) for particular units in science (e.g., electricity), social studies (e.g., democracy), mathematics (e.g., graphing) and Icelandic Language and Literature (e.g. the novel *Angels of the Universe*, Guðmundsson, 2016). Important

Icelandic Vocabulary

words from the disciplinary instructional materials were selected, and suggestions made for instruction using the same activities that had been introduced in August.

These resources helped teachers get started on choosing vocabulary and designing instruction that matched their curricula. Teachers self-reported that they used these resources; they gave helpful feedback, i.e. what they were able to include in their lessons and what was more difficult to implement. For example, a strength was facilitating students' generation of their own sentences with target words. Unfortunately, we were not invited into classrooms to observe teachers' instruction.

Measurements

We administered a validated Icelandic vocabulary test, as well as an Icelandic reading comprehension test, to students at all five schools as paired pretests in September 2017 and posttests in April 2018.

Vocabulary. We used the word definition test *Orðalykill* (Gunnarsdóttir, et al., 2004). This group test includes 55 items arranged in order of difficulty. The test taps both receptive and productive word skills (students produce a definition or a synonym). *Cronbach's Alpha* for this measurement is reported .96. In the present study it was .95 on pretests and .94 on the posttests.

Reading comprehension. We used the group test *Lesskilningspróf Námsmatsstofnunar*, which is a multiple-choice format reading assessment. The *Lesskilningspróf* was constructed using texts and comprehension questions from older test forms of the Icelandic National Assessments for tenth grade exams. Inter-item reliability, *Cronbach's Alpha*, 0.83.

Analysis

Icelandic Vocabulary

We analyzed the data using version 25 of the SPSS statistical software. To test our hypothesis, we calculated the F-statistic using a two-way mixed ANOVA. The criterion for reporting statistical significance was set at $\alpha = .05$. The criterion for interpreting Cohens d was set: small effect $\sim .01$; medium effect $\sim .05$; large effect $\sim .8$ (see Cohen, 1988). For interpreting effect sizes in a two-way mixed ANOVA we used the partial eta-squared statistic and set the criterion at: small effect $\sim .01$; medium effect $\sim .06$; large effect $\sim .14$ (see Miles & Shevlin, 2001). Missing participants were listwise deleted.

Results

Descriptive statistics

The major study variables showed adequate psychometric properties with skewness and kurtosis less than the numeric value of one and reliability coefficients higher than .7 (see Table 1). After assuring adequate reliability and normal distribution, we conducted a paired samples T-test to see if mean differences for reading comprehension and vocabulary could be detected for both the experimental and control schools.

Table 1

Psychometric properties of the major study variables in all schools before any intervention took place.

Variable	n	M	SD	α	Range				Skew	Kurt.
					Potential		Actual			
					Min	Max	Min	Max		
Reading Comp.	242	11.5	3.4	.67	0	19	1	18	-.45	.16
Vocabulary	239	27.9	10.7	.95	0	55	1	52	-0.1	-.60

Icelandic Vocabulary

The average reading comprehension was significantly higher during the posttest for the experimental schools compared to the pretest ($p = .002$; see Table 2). The effect for the experimental schools was between a small to medium effect ($d = .3$). Similarly, the average reading comprehension was significantly higher during the posttest for the control schools ($p < .001$). However, the effect size for the control schools was slightly smaller ($d = .2$).

The paired samples T-tests showed that the difference in the vocabulary means between the pre- and posttests was very small for both the experimental schools ($d = .1$) and the control schools ($d = .1$). Indeed, the difference was so small that for the control schools the difference was not statistically significant ($p = .06$) and for the experimental schools the small difference in vocabulary was only marginally significant between the pre- and posttests ($p = .05$).

Table 2

Mean differences between pre- and posttests for the experiment and control schools on reading comprehension and vocabulary.

Variable	Pretest			Posttest			t	p	Cohen's d
	N	M	SD	N	M	SD			
Reading Comp.									
Experiment schools	136	11.3	3.3	136	12.3	3.3	-3.2	.002	.3
Control schools	59	11.5	3.0	59	12.1	3.1	-4.2	<.001	.2
Vocabulary									
Experiment schools	130	29.0	10.1	130	29.9	10.3	-2.0	.05	.1
Control schools	60	25.8	11.1	60	26.8	10.5	-1.9	.06	.1

Note. Participants with missing data were listwise deleted.

Icelandic Vocabulary

The lack of differences in vocabulary between the pre- and posttests for the experimental and control schools made it unnecessary to conduct a two-way mixed ANOVA to investigate possible differences in vocabulary gains between the two groups.

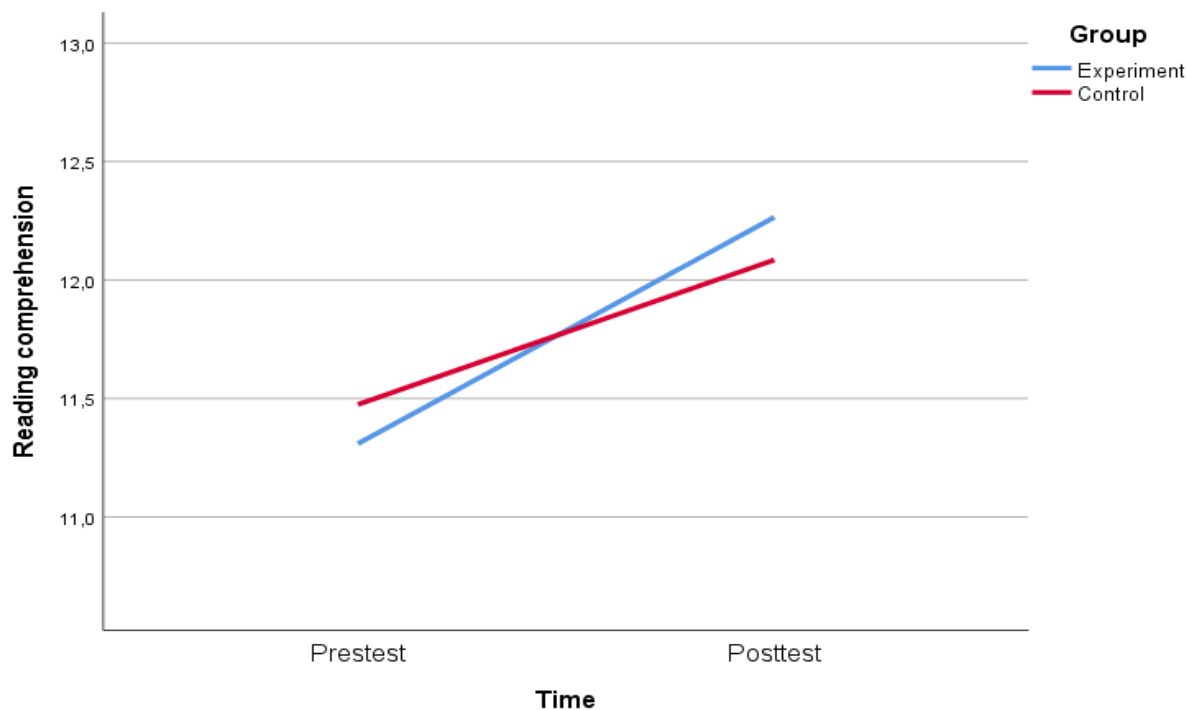
Gains in reading comprehension?

A two-way mixed ANOVA was used to investigate possible differences in reading comprehension gains between the two groups. Descriptive statistics (see Table 1) showed that necessary assumptions regarding normal distribution were met. There were no outliers, as assessed by examination of studentized residuals for values greater than ± 3 . Levene's test for equality of variances indicated homogeneity of variances of reading comprehension in the pretest ($p = .18$) and the posttest ($p = .19$). Furthermore, there was homogeneity of covariances, as assessed by Box's test of equality of covariance matrices ($p = .74$). There was no statistically significant interaction between the intervention (i.e., attending the experiment schools) and time on gains in reading comprehension, $F(1, 193) = .721$, $p = .40$, partial $\eta^2 = .004$ (see Figure 1). The main effect of time showed a statistically significant difference in reading comprehension at the different time points, $F(1, 193) = 14.803$, $p < .001$, partial $\eta^2 = .071$. This shows that, despite the lack of a significant interaction effect, overall, students in both the control and experimental schools indicated moderate gains in reading comprehension. However, the different slopes in Figure 1 indicate that the interaction effect might have become larger and significant with adjustments to the length and intensity of the intervention as well as the timing of measurements.

Icelandic Vocabulary

Figure 1

Students in both the experimental and control schools showed moderate gains in reading comprehension



Discussion

Uccelli, Phillips, et al., (2015) note that the knowledge of high-utility language fundamental for the development of reading comprehension of academic texts, called *core academic language skills* (CALS), is required across the wide range of disciplines in school. This was the vital focus of our study.

We sought to find the answer to the following research question: Will teacher professional development have an impact on student knowledge of Icelandic vocabulary and reading comprehension? Although we do not have statistically significant differences between the intervention and control groups, as evidenced in the pre- and post- vocabulary and reading

Icelandic Vocabulary

comprehension tests, this study is a first exploration of the important topic of whether intensive vocabulary instruction impacts adolescent academic learning and advancement in their school language.

Figure 1 illustrates slopes that indicate that the intervention effect might have become larger and statistically significant with adjustments to the length and intensity of the intervention or with the timing of measurements. The slopes imply that following students beyond one academic year to measure their vocabulary growth could be promising.

The nature, intensity, and length of the professional development offered to the 10th grade teachers in the experimental schools was one explanation of the results. Whether the teachers in the experimental schools taught vocabulary in robust ways was difficult to capture. Classroom observations would have assisted in confirming what actually occurred in the classrooms, instead of relying only on the teachers' self-reporting. Regrettably, we were not invited into classrooms to observe.

This study suggests that a longer period of time of PD than one year may be needed for change in student outcomes. Teachers' pedagogical change and the impact on their students may occur over several years. Kennedy (in press) points out the importance of clear content knowledge, which this study of vocabulary certainly fits. Furthermore, she notes that collective participation for effective PD is important; we had groups of teachers participate from several schools.

In a future paper we will describe the qualitative data from teachers' feedback and the interviews of key stakeholders. In essence, some teachers became more word conscious. They may have modelled for their students ways to highlight Icelandic vocabulary. A benefit for

Icelandic Vocabulary

students was detected by a participating social studies teacher. He claimed that the PD had influenced his teaching approach:

It was so apparent that the kids had acquired a solid understanding. They felt confident in discussion the issue and using the words. You see, before, I had realized the importance of Tier 3 words, but after the course, I started to focus on Tier 2 words. You witness how poorly the kids understand the Tier 2 words, the majority of them. There are so many words that you would expect them to understand, but they don't until you support them explicitly.

Even though we have not been able to demonstrate significant connection from explicit instruction of Icelandic vocabulary to comprehension, others have shown that increased vocabulary knowledge has an impact on reading comprehension (LaRusso, et al., 2016; Ólafsdóttir, 2016) and on learning disciplinary content (Nagy, et al., 2012; Uccelli, Phillips, et al., 2015). Since few prior research projects have focused on high school (versus younger) students' learning of vocabulary, this study adds to the field. It is hoped that continued focus on robust vocabulary instruction will make a measurable impact on students' academic use of Icelandic. We hope that future studies will demonstrate such results for adolescents.

This study skirts the question of whether students are increasing their English skills at the cost of their Icelandic language proficiency. Instead, we wanted to examine if it is possible to improve learners' Icelandic language skills, especially for academic and beyond basic language purposes, by providing pupils opportunities to enrich their Icelandic academic vocabularies. Positive effects would benefit the students themselves, their future studies, and active participation in Icelandic society, and concomitantly would be a contribution to the preservation of the Icelandic language.

Iceland is similar to other countries that have found that English, a second language, has become global (even invasive) in the 21st century. Icelandic is one of many world languages that has to strive to survive in a digital, English-dominated, information society (Rögnvaldsson, et.

Icelandic Vocabulary

al., 2012). This study demonstrates efforts to enhance a local language in the face of the pervasiveness of English in global commerce, literature, higher education, and other essential societal fields. Although the results from this one-year study are minimal, continued focus on teaching adolescents to value and expand their societal language is an important issue of cultural survival.

Limitations

Using standardized tests for the measurement of student growth is not optimal. It would have been better to use informal tests that reflect the actual instruction provided.

A major limitation of this research were the boundaries of the findings, both for students and for teachers. We also had limitations related to support of the teachers in the field, as there was only one researcher who could access the schools (because of geography). Another limitation is that no observations of teachers were carried out, as they would not allow the researcher into their classrooms. Therefore, we have only self-reports from the teachers about whether they taught the targeted words—those included in the word-activity packets—and other Tier 2 and Tier 3 vocabulary. (Our next report will contain data about the teachers beyond one year.)

Conclusion

The case of Icelandic as a language under siege is significant for other languages that are being pressured by global English. Although we do not have significant findings in this study, this research is a first step in filling the gap in the fields of vocabulary instruction for adolescents, the globalization of English, and professional development for high school language learning. Clearly, all of these areas need further examination. Furthermore, as advanced academic Icelandic language is for the first time explicitly taught in schools as in this project (as

Icelandic Vocabulary

far as we know), future studies will be able to answer whether there is a positive longer-term impact on Icelandic culture and communication.

Take Action! Sidebar

1. As a school, explore how Tier 2 words can be emphasized across subject areas. For example, during the same week or month, could the word “trajectory” be used in English, Social Studies, Mathematics, Physical Education, and Science classes?
2. Use interactive games—both print and digital—for vocabulary learning in subject classes and across the whole school.
3. Provide professional development activities and resources for teachers (including ongoing professional learning communities/PLCs) that emphasize students’ learning via multiple exposures of new targeted Tier 2 and Tier 3 vocabulary using multi-modal interactive activities (e.g., role playing, creative writing).

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