Vocabulary learning during reading: A comparison of a word-based strategy versus a text-based strategy

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ABSTRACT

The present study is an attempt to provide evidence for the Self-Teaching Hypothesis according to which phonological recoding supports learners' achieving word recognition skills and keeping in mind the connections amongst pronunciation, spelling, and meaning of new words in reading. For this purpose, 46 Iranian EFL learners (2 classes of 12 to 15 years old) were randomly selected. These learners were given 6 to 8 sentence long texts and in each text an unknown vocabulary item was underlined and repeated 2 times. Participants in the experimental condition were asked to read the text silently but the underlined word aloud and those in the control condition were asked to read the text (including the new words) silently. After this experiment learners were tested on text recall, spelling, and meaning of new words. The results show significant gains for the experimental group on spelling and meaning of new words. Pedagogical implications of this finding will be discussed at the end.

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1. Introduction

One of the most important factors determining future achievement in learning an L2 is mastery of new words (Cunningham, 2006). Students learn most of the new words through written texts (Graves, 2006). Hart and Risley (1995) contend that most learners do not know how to make use of texts in order to gain vocabulary knowledge. They argue that there is a need to distinguish strategies which can promote attaining new words. A common strategy in dealing with unfamiliar words is skipping them in context and trying to understand the meaning through local and global context and replacing synonyms for those words (Graves, 2006). But this strategy has been questioned by scholars arguing that new words are not learnt in this way, although it may facilitate text understanding (Stanovich, 1996). A key step in learning new words is grasping phonological information. Words in the form of print (printed graphemes) must be changed to phonemes in a process called phonological recoding and this process needs to be considered in reading and vocabulary achievement (Ziegler & Goswami, 2005).

An important technique for successful reading is making visual connections to understand word meanings (Stuart & Coltheart, 1988). The two mechanisms in visual connections entail phonological decoding and visual-orthographic operations. Ehri (1998) contends that for successful mastery of vocabulary in texts, the pronunciation of that word must be figured out in a way that letter-sound relationships are recognized. Syntactic features of words need to be learned from the context and finally these characteristics are to be linked together and be kept in memory. The Self-Teaching Hypothesis proposed by Share (1995) links successful phonological recoding to learning orthographic patterns of words which can lead to proficiency in reading. In this model, when graphemes are changed to phonemes in learners' mind, visual word

identification dexterities are reinforced. Learners come to an oral imagination of the written form through phonological recoding (Share, 1995). It has been mentioned that direct teaching and use of context for guessing meaning are inefficient ways to learn vocabulary since in direct teaching teacher time is limited and unforeseeability of content words deters learning of a considerable number of words (Gough, 1983). The Self-Teaching Hypothesis can play a great role for readers who need an apparatus for acquiring the pronunciation of unknown words (Share, 1995).

A study done by Rosenthal and Ehri (2008) corroborates the role of connections of word identities for keeping the word meaning in memory mentioned previously. In this study one group of learners (experimental) were exposed to spelling and pronunciation of a number of words and for the other group (control) only pronunciation was given. The results indicated that spelling facilitated memory for meaning and pronunciation. Cunningham et al. (2002) did a study in which English students read aloud texts containing pseudo-words and found evidence for orthographic learning. This study supported Self-Teaching Hypothesis since phonological recoding proved to be effective in promoting orthographic lexicon (Share, 1995). In another study, Cunningham (2006) provides strong evidence for the role of phonological recoding in the mastery of orthography. In this study, phonological recoding was significantly lowered by making students have concurrent articulation in reading (since it obstructs pronunciation). As expected, orthographic knowledge was diminished in the learners. Also de Jong et al. (2009) came to the conclusion that learners in both silent reading and oral reading improved knowledge of orthography. They argued that because the pseudo-words were monosyllabic phonological decoding had been acquired for both conditions.

The current research tries to provide evidence for the Self-Teaching Hypothesis. As mentioned above, this hypothesis

claims that phonological recoding is an important factor in orthographic learning of written words in reading. For this purpose, the effects of oral and silent reading of printed words were juxtaposed across real English words. In one mode, students were asked to pronounce orally the underlined words in the text and in another mode, they only read them silently. Based on this hypothesis, it was expected that participants in the read-aloud condition show improvement on spelling and meaning of the vocabulary items provided. When learners pronounce the word, connections between spelling, meaning, and pronunciation are reinforced and word identities will be kept in memory (Share, 1995).

In this study each new word was offered two times in context and students were provided with a picture of that word along with its explanation. Students in the control condition were intended to make use of context-based strategies in order to guess the meaning of the word. In the experimental condition, phonological recoding strategy was expected to be used for learning the specific vocabulary item. Previous studies (Cunningham et al., 2002; Nation et al., 2007; Kyte & Johnson, 2006; Bowey & Muller, 2005) have found relationship between phonological recoding and orthographic learning. A limitation of these studies was using monosyllabic words. In these studies even if words were not read aloud, they may have been recoded since the words were simple with straightforward spelling. Unlike those studies, in this study multisyllabic words were used.

Based on what has been discussed so far, the following research questions were addressed in this study:

1-Is there any significant difference in learning the spelling of unknown vocabulary items between EFL students who read the unknown words aloud and their counterparts who read the unknown words silently?

2-Is there any significant difference in learning the meaning of unknown vocabulary items between EFL students who read the unknown words aloud and their counterparts who read the unknown words silently?

3-Is there any significant difference in text recall between EFL students who read the unknown words aloud and their counterparts who read the unknown words silently?

2. Methodology

2.1 Participants

The sample of this study consisted of 46 intermediate Iranian EFL students studying in a private English school in Iran. This school had 10 intermediate English classes and two classes were chosen by random sampling. These learners were between 12 to 15 years old. Before the study, the parents were informed and their agreement was taken.

2.2 Procedures and Materials

Each learner was given 6 passages and in each passage one underlined new word (multisyllabic and concrete) appeared two times and also a synonym was provided for that word. A picture of that word came together with the texts. The texts contained 6 to 8 sentences. The learners in the experimental condition were asked to read the passage silently but read the underlined word aloud. Participants in the control condition were given the same texts asking them to read the texts (including the new words) silently. We requested learners to check if they knew the meaning of new words. In this way, we could make sure that learners paid attention to the word. Students were told that comprehension questions will be asked after they read the texts.

The learners read 3 texts each day (6 texts in 2 days) and were tested on recalling the text, word spelling, and word definition.

For testing text recall, students were asked to orally state what they could remember from each text. Following Moss (2004) up to three scores was specified to the respondents for each text (one score for the main idea and two scores for details). In order to check the learners` spelling, they were required to write down the word after it was read three times. Finally, learners were given a written test requiring them to choose a short definition amongst the four given options and this was done for each new word. For spelling and meaning the maximum score was 6 points.

2.3 Data Analysis

Three independent t-tests were used to check the significance of the variables mentioned (text recall, word spelling, and word meaning) between the two conditions (reading the unknown words aloud or silently). The maximum score for text recall was 18 for each learner for the 6 words, and for spelling and meaning the learners could receive 1 point for each word (total of 6 points for spelling and 6 points for meaning).

3. Results

A series of independent samples t-tests were applied to compare the effects of the two approaches to reading unknown words in texts (pronouncing the unknown word aloud versus reading the unknown word silently) on text recall, word spelling, and word meaning.

The first analysis measured if pronouncing the unknown words during reading texts can influence remembering ideas in the text. Since pronouncing new words may distort learners from attending to other parts of the text, higher performance of the silent group was not unexpected. But the results (Table 1) show no significant difference between the two conditions.

Table 1. Independent Samples Test of Text Recall

Groups	N	Mean	SD	t	Sig
Reading Silently	23	14.174	.213	-2.209	.032
Reading Aloud	23	14.052	.159		

Next, the effect of phonological recoding on spelling abilities of our participants was investigated by running an independent samples t-test. As it was hypothesized, learners in experimental condition (reading aloud) showed significant gains in achieving spelling skills, although the Mean of both groups is high enough (4.13 and 4.51 out of 6).

Table 2. Independent Samples Test of Spelling Performance

Groups	N	Mean	SD	t	Sig
Reading Silently	23	4.130	.457	-2.736	.009
Reading Aloud	23	4.512	.510		

Finally, we computed the effect of phonological recoding on learning the meaning of new words. As it is demonstrated in Table 3, reading new words aloud during silent reading can significantly facilitate learning of students.

Table 3. Independent Samples Test of Meaning

Groups	N	Mean	SD	t	Sig
Reading Silently	23	3.565	.945	-3.292	.002
Reading Aloud	23	4.434	.843		

4. Discussion

As reported by Share (1995), Self-Teaching Hypothesis puts forth the idea that vocabulary learning during reading is dependent on phonological recoding. The results of this study provide evidence for this hypothesis. Participants who were given the chance for phonological recoding performed significantly greater than participants who read the words silently in terms of spelling and meaning attainment. Learners in

the phonological recoding condition made fewer errors on spelling and meaning. Our learners were exposed to tests that were lexical decision tasks and needed slight visual-orthographic processing which is related to functioning of letters in the words (Seidenberg, 1985). In this study the visual-orthographic functioning was the same in the two conditions since learners in the two conditions saw the new words for the same amount of time and took similar lexical decisions. In both read-aloud and silent conditions learners had adequate time bearing in mind the letter strings and therefore superiority in the experimental condition can be related to phonological recoding and not visual orthographic processing.

Share (2004) argues that there is little benefit in repeating the new word more than two times in reading. In this study learners had 2 exposures with the new words and show robust improvement in learning spelling and meaning. Bowy and Muller (2005) contend that orthographic learning is also found in silent reading as a result of print exposure. Our results confirm this idea with mean score of 4.13 for spelling and 3.56 for meaning mastery in the silent group. Cunningham et al. (2002) believe that visual processing can be a major reason for orthographic learning. Sight of new words may prompt networks that help spelling and meaning to stay in memory. Cunningham et al. (2002) also contend that visual skills and orthographic learning are correlated and this dependency is not so much counting on recoding prowess. Another reason for the acceptable performance of the silent group comes from the research on deaf persons. Paul (2001) provides evidence for deaf children who have achieved high levels of mastery in orthographic learning from reading comprehension by relying on visual processing abilities.

The results of this study show that learners who pronounced the new words aloud outperformed learners in the silent condition. Ehri (1992) postulates that oral decoding facilitates the development of grapho-phonemic connections which in turn can activate bonds between spelling and pronunciation. Some letters can be pronounced more than one way and when learners pronounce those letters it helps them to keep spellings in memory. Learners in the silent condition may have skipped grapho-phonemic complexities since they did not have to pronounce the words aloud and this caused them to show inferior performance in spelling.

It can be argued that in this research two strategies for learning vocabulary during reading were compared, namely, word-based strategies and text-based strategies. Oral decoding is a word-based strategy and silent reading is a text-based strategy since in silent reading students are fostered to attend to the context to sort of guess the meaning of words. Our analyses indicate robust gains for word-based strategies in acquiring vocabulary knowledge. It may have been assumed that although learners in the oral condition show priority in acquiring the spelling and meaning, they may have shortcomings in understanding the text ideas. But our finding does not display any significant difference between the two groups in remembering the text which means participants` attention to the new word in the oral recoding condition did not cause them to be inconsiderate to the other parts of the context.

5. Concluding Remarks

The study presented convincing evidence in favor of the superiority of the oral decoding condition in the achievements of spelling and meaning of new words. Phonological recoding can help convert letters into sounds and facilitate L2 learners`

engagement in structure of words and therefore help them better remember meanings and spellings. According to Share (1995), each time the learner tries to phonologically recode new words, it becomes an opportunity to learn new orthographies and when this process is administered for a number of times learners can make bonds between orthography and sight reading of vocabulary. Arthur et al. (1994) argues that learners make use of phonology to investigate the lexical characteristics of words and this phonological analysis is dependent upon sound to print exchange. In this way, learners with the help of sound-print feedback can bolster associations between written and spoken forms.

The findings implicate the importance of training of L2 learners in phonological skills since in this way the relationships between phonemes in oral language and printed letters are better discerned. For this purpose learners need to have been instructed on alphabet knowledge. Learners can employ the tenets of Self-Teaching Hypothesis and retain spelling and meaning of words when they are fully aware of sound-symbol relationships (Levy et al., 1999).

The study reveals that just exposing learners to reading texts for increasing vocabulary knowledge is not enough. L2 learners need to be provided with training on vocabulary learning strategies e.g., teaching students to pronounce the new words aloud. In the same vein, educators are advised to provide learners with texts the meaning of their new words can be inferred from the context.

One of the issues that needs to be mentioned is the significance of the language under investigation. Languages are deep or shallow in orthography; that is to say the level of conformity between grapheme and phoneme is different in diverse languages (Cunningham et al., 2002). This variable can account for the degree to which learners can make use of the Self-Teaching Hypothesis and phonological recoding. In this study English which is a deep orthography language with erratic sound-letter relations was analyzed. However it remains to be probed how other languages respond to this hypothesis.

In the current study receptive vocabulary knowledge was tested. It is obvious that expressive vocabulary is more difficult to acquire (Senechal, 1997). Probably, learning to use these words in production needs further repetitions and how Self-Teaching Hypothesis influences learning production of these words needs further investigation. There are many other issues that need to be investigated in future research like how students perform in abstract vocabulary or considering the effect of instruction of these strategies on learning new items. Finally, another variable that should be taken into account is the time after the experiment. In this study learners were tested right after reading the texts but how they behave after a longer time awaits further inquiry.

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