

# The Picture Word Inductive Model and Vocabulary Acquisition

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**Abstract.** The purpose of this quasi-experimental study was to determine if students' vocabulary acquisition is enhanced with the picture word inductive model (PWIM), a research-based method of vocabulary instruction. During instruction with the PWIM, students were shown a picture and were asked to identify items in the picture, eliciting words from the children's listening and speaking vocabularies. This process essentially created a picture-word dictionary which the students could employ to connect words with corresponding pictures. The experimental group of 14 second graders participated in the 4-week intervention, while the control group, consisting of students from the two other second grade classes, did not receive this intervention. The PWIM intervention was analyzed through nonparametric statistics by examining the vocabulary gains that students made from the pre-assessment to the post-assessment. Additionally, gains of English language learners (ELL) and native-English speakers were compared. Further, gains of the experimental group participants and the control group participants were compared. Results indicated that statistically significant differences were achieved between the control and experimental group participants on the final assessment.

## 1. Introduction

According to the National Reading Panel Report (National Institutes of Health, 2000), the importance of vocabulary instruction in students' reading achievement has been acknowledged for over 50 years. Biemiller (2003) described significant differences in vocabulary size among children already by the end of second grade. Therefore, since most vocabulary distinctions develop among individuals before third grade, at which point a significant disparity exists in the pace of word acquisition (Biemiller & Slonim, 2001), it is essential to begin building vocabulary knowledge when children are young.

According to the 2000 United States Census Bureau, 31.1 million people living in the United States had been born in a foreign country (Drucker, 2003). This figure has increased more than 50% since 1990 and currently represents over 11% of the total population of the United States (Drucker, 2003). They are sometimes referred to as English-language learners (ELLs) or English as a second language (ESL) students (Drucker, 2003).

Language proficiency and literacy development are significantly related. Frequently, it is assumed that children who can demonstrate competency in communicating socially, such as on the playground or in the cafeteria, are also able to proficiently communicate academically in the classroom. However, social language utilizes gestures, body language, and facial expressions. This style contrasts sharply with academic language, which often lacks these nonverbal clues and focuses instead on the requirements of learning the academic content (Drucker, 2003; Watts-Taffe & Truscott, 2000). Children who are ESL need explicit instruction in academic language.

Scaffolding, providing contextual, social, and temporary frameworks to capitalize on students' strengths, can be used effectively to help ESL students acquire proficiency in English during integrated instruction (Watts-Taffe & Truscott, 2000). One research-based, instructional method of promoting literacy by teaching vocabulary is the picture word inductive model (PWIM). Originally designed by Emily Calhoun as a major component of a language arts curriculum for beginning readers (Calhoun, Poirier, Simon, & Mueller, 2001), this model has several specific purposes. According to Calhoun (1999), the PWIM is used with "classes, small groups, and individuals to lead them into inquiring about words, adding words to their sight-reading and writing vocabularies, discovering phonetic and structural principles, and using observation and analysis in their study of reading, writing, comprehending, and composing" (p. 21). Specifically, "the PWIM is an inquiry-oriented language arts strategy that uses pictures containing familiar objects and actions to elicit words from children's listening and speaking vocabularies" (Calhoun, 1999, p. 21).

Given the importance of vocabulary knowledge to reading success and the potential risk ESL students face when learning to read, this study sought to address two research questions: (a) what are the effects of the PWIM on vocabulary acquisition?, and (b) are there differential effects of the intervention on vocabulary and comprehension skills based on language status?

## **2. Method**

The sample of participants consists of 35 second graders of low socioeconomic status, from an elementary school in a Midwestern city. All participants were seven, eight, or nine years old. There were two groups of participants, an experimental group (n=14) who received the intervention, and a control group (n=21) who received typical classroom instruction, without the intervention. Nine of the experimental group participants and 16 of the control group participants speak English as a second language.

To assess students' vocabulary knowledge, a researcher-generated assessment was administered prior to intervention (pretest) and immediately following intervention (post test). This assessment, consisting of 37 vocabulary terms, targeted some of the vocabulary expected to be suggested by students in the course of the project.

During instruction with the PWIM, a research-based method of vocabulary instruction that connects reading and writing, students were shown a picture and were asked to identify items in the picture. The teacher wrote each identified word on chart paper outside the picture and drew a line from the word to the item in the picture. This process essentially created a picture-word dictionary which the students could employ to connect words with corresponding pictures (Joyce & Weil, 2004). The PWIM intervention occurred four times per week for four weeks. Each PWIM session lasted approximately 20 minutes.

To address the first research question, a two sample Kolmogorov-Smirnov test was performed to assess group differences (i.e., control group vs. experimental group) in vocabulary knowledge. Nonparametric statistics were employed given the violation of the normality assumption. Results indicated that participants in the experimental group outperformed those in the control group ( $Z=1.45$ ,  $p<.03$ ) even after holding initial vocabulary status constant. This indicates that the PWIM intervention facilitated growth in vocabulary knowledge above and beyond that afforded by typical classroom instruction.

To address the second research question, data from only the experimental group were examined. Those students who were ESL were compared to those who were non-ESL. Results indicated that there were no statistically significant differences in vocabulary acquisition based on language status ( $Z=1.03$ ,  $p<.24$ ). This indicates that the intervention did not have a differential impact.

## **3. Conclusions**

In conclusion, results from this study indicate that the PWIM appears to be an effective instructional tool for classroom teachers to use in facilitating vocabulary acquisition. The fact that no differences were found between ESL and non-ESL students' performance on the vocabulary post-test measure within the experimental group could be attributed to the ESL students' high levels of English proficiency upon the study's initiation. The use of scaffolding and explicit connections to concepts and words appears to be beneficial to all students, regardless of language status.

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