Web-Based Vocabulary Instruction: A Randomized Control Trial of DictionarySquared with High School Students

Suzanne Adlof, Ph.D. Joanna Scoggins, M.Ed.
Adam Kapelner, Ph.D. Margaret McKeown, Ph.D. Yaakov Petscher, Ph.D. Charles Perfetti, Ph.D.

Introduction

Many high school graduates do not possess adequate vocabulary knowledge for success in college and careers (ACT, 2010; NCES, 2009), and evidence for effective high school vocabulary interventions is limited. To address this gap, this project is aimed at the iterative development and evaluation of a web-based vocabulary intervention platform, DictionarySquared™, intended to provide high quality, individualized vocabulary instruction to high school students. The long-term goals are to (a) develop to develop a platform that can provide effective, individualized instruction of virtually any English word, and (b) to test whether regular usage of the platform increases students’ overall vocabulary knowledge and reading comprehension.

In this paper, we share results of a randomized control trial testing the effects of DictionarySquared usage on high school students’ vocabulary knowledge and reading comprehension.

Participants

- 30 high school language arts classrooms participated in the study from 5 schools and 8 teachers (3-7 classes each section)
- Classrooms were blocked by grade (9-10; 11-12) and class level (regular; advanced)
- Classrooms within those blocks were randomly assigned to treatment or control conditions at 2:1 ratio
- 22 treatment class sections (396 students); 8 control class sections (152 students)

Pre and Post Test Measures

Proximal Assessment: D2 Test
- Assessed knowledge of 50 words spanning all 10 difficulty bands

- GMRT-Vocabulary
- GMRT-4 Reading Comprehension

Methods

- The Treatment Group was assigned to use DictionarySquared for 50 min per week, as part of semester course grade. In some classes, students were given class time to use the site; in other classes, it was assigned as homework.
- In the Control Group, teachers carried on “business as usual”.
- Pretests and Posttests were in Aug-Sep and Nov-Dec respectively.
- Time between pretest and posttest for each class was a minimum of 11 weeks, with some classes having 12 or 13 weeks of potential usage.

Results

Usage and Pretest Correlations

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out of 100</td>
<td>Out of 100</td>
</tr>
<tr>
<td>GMRT Vocab</td>
<td>GMRT Vocab</td>
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<tr>
<td>GMRT Comp</td>
<td>GMRT Comp</td>
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Primary Impact

<table>
<thead>
<tr>
<th>Baseline Impact</th>
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</thead>
<tbody>
<tr>
<td>D2 raw score</td>
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<tr>
<td>Vocabulary ESS</td>
</tr>
<tr>
<td>Comprehension ESS</td>
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</tbody>
</table>

Usage: 2 weeks - 10 Minutes Active Usage
Mean = 6.22, SD = 3.35

Discussion

- Students used DictionarySquared regularly, but below intended levels.
- Significant, moderate treatment effects on proximal assessment; no effects on distal assessment.
- Number of words experienced mediated the effects on proximal but not distal measures.
- Despite lower than intended usage, student feedback about DictionarySquared was positive.

Further Directions

- Examine effects for students with high fidelity
- Explore quality of usage, task engagement
- Spring follow-up study examining the effects of no usage, continued usage, and discontinued usage after fall RC.
- Test effects on “near transfer” assessments, e.g., performance on standardized tests.
- Conduct usage studies in other contexts.

References


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Presenting Author Contact Info

Suzanne Adlof sedlof@sas.upenn.edu
Joanna Scoggins jscoggins@sas.upenn.edu

DictionarySquared www.dictionarysquaredresearch.sc.edu