

USING A PHONETIC ALPHABET, THE INITIAL TEACHING ALPHABET (I.T.A.), TO REMEDIATE READING DISABILITIES IN FIRST-YEAR COLLEGE STUDENTS

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Abstract

Community colleges in the United States serve many students who are unprepared for college-level academics. Noncredit developmental reading courses are offered, but research shows that these courses face challenges in student retention and advancement to college-level courses. A major deficit area for students is reading, specifically phonological transcription of polysyllabic words heard in academic courses and understanding of content vocabulary in reading assignments.

This study investigated a word study strategy for acquisition of content vocabulary which incorporated four steps: (1) segmenting spoken words by syllables; (2) using a phonetic alphabet (i.t.a.) to transcribe spoken words to phonetic equivalents; (3) finding the written word in electronic spell checkers (iPads or online dictionaries); and (4) accessing the meaning of words. The emphasis was on Latin-based vocabulary from content courses. The hypothesis was that mastery of this process with college-level terms would result in increased vocabulary knowledge and reading comprehension.

This single-subject research study included nine college freshmen whose placement tests on entrance indicated that they needed a developmental reading course before they could be enrolled in college-level academic courses. The investigator met with these students for two 45-minute intervention sessions per week for eight weeks.

Measures used included the following pre and post-tests: (1) Nelson-Denny Reading Tests, Vocabulary and Comprehension Subtests; (2) Wide Range Achievement Test, Spelling, with misspellings scored for phonetic equivalents; (3) Auditory Analysis Test-Revised for assessment of phonological skills; and (4) a researcher-developed vocabulary test featuring content words from freshmen-level academic courses.

Analysis of study results includes graphical presentation of pre and post-test scores for each individual student on the four assessment measures. Paired-sample t-tests investigated group progress.

Keywords: Reading disabilities, higher education, educational intervention, phonological deficits.

1 INTRODUCTION

As open-enrollment institutions, community colleges in the United States serve many students who are unprepared for college-level academic classes due to reading and written language delays. A primary deficit occurs in their inability to transcribe spoken words from their lecture classes as phonetic equivalents. Therefore, spelling resources such as dictionaries or electronic spell checkers do not retrieve the correct word for them, leading to continued difficulties with acquisition of academic and content vocabulary. This same inability to segment words by syllables and sounds hampers their ability to decode words in their reading materials from these same classes.

Additionally, the current assessments used by community colleges to determine students' reading abilities are inadequate for diagnosing specific reading disabilities [1]. Consequently, students with phonological deficits compound their reading problems because their reading difficulties are never properly diagnosed. The International Dyslexia Association [2] updated their dyslexia definition to explain how phonological deficits can negatively affect many reading skills if the deficit remains undiagnosed. Fig.1 depicts the effects of phonological deficits on the acquisition of all phases of reading development.

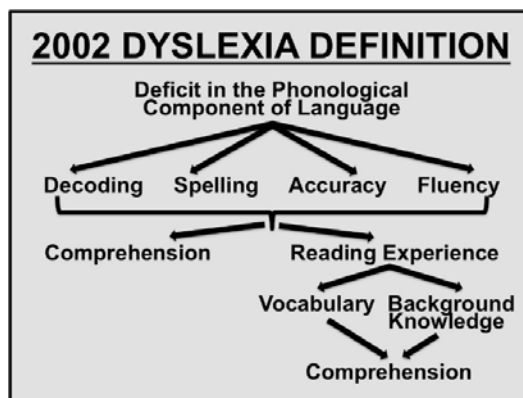


Figure 1. International Dyslexia Association Dyslexia Definition.

Non-credit developmental reading courses offered at U.S. community colleges focus on reading strategies, but research shows that these courses face challenges in student retention and advancement to college-level courses. Rosset and colleagues [3] note that despite high rates of enrollment in developmental education, large gaps in achievement and degree completion persist. Also, in a research brief published by the Midwestern Higher Education Compact [4], it was noted that the disparities in remedial enrollment by ethnicity and income mirror the achievement gaps observed in the Preschool-12th grade educational sector.

A major deficit area for students is reading, specifically phonological transcription of polysyllabic words heard in academic courses and understanding of content vocabulary in reading assignments. Kitz and Nash [5] proposed that when teaching approaches for struggling adult learners focus on phonological awareness (understanding that spoken words are composed of units [i.e., syllables and phonemes—the smallest sound units within words] that can be manipulated) and orthographic understandings (alphabetic principle, spelling patterns, and meaning patterns/roots), a range of related positive literacy outcomes may result, including improvement not only in spelling, but also in writing, reading rate, and ultimately, reading comprehension.

2 METHODOLOGY

This study investigated a word strategy starting with phonological awareness to acquire content vocabulary that students would encounter in their college classes. The sequence for remediation of phonological deficits simultaneously with acquisition of content vocabulary included: (1) segmenting spoken words by syllables; (2) using a phonetic alphabet, the Initial Teaching Alphabet (i.t.a.) to transcribe spoken words to phonetic equivalents; (3) finding the written word in electronic spell checkers (iPads or online dictionaries); and (4) accessing the meaning of words. The hypothesis was that mastery of this process with college-level terms would result in increased vocabulary knowledge and improvement in reading comprehension.

This single subject research study included nine college freshmen whose placement tests upon entrance indicated they needed a developmental reading course before they could be enrolled in college-level academic courses. The investigator met with these students for two 45-minute intervention sessions per week for eight consecutive weeks.

Before the first instructional session, students took two pre-tests: the Auditory Analysis Test-Revised (AAT) [6] and Wide Range Achievement Test-4 (WRAT-4) spelling subtest [7]. The AAT assesses how students differentiate sounds in 40 words ranging from one to four syllables. A sample protocol between instructor and student follows:

- Instructor: Say continent
- Student: Continent
- Instructor: Say it again, but don't say "in"
- Student: Content

The instructor progresses through the list and the words increase in difficulty. If the student misses the sounds in six consecutive words, the instructor stops testing their respective student.

In administering the WRAT-4 spelling test, students are given a list of 42 words beginning with *on* ending in *pusillanimous*. A sample protocol between instructor and student follows:

Instructor: *Acquiesce*. The judge refused to acquiesce to the attorney's demands. *Acquiesce*.

Student writes the word *acquiesce* as they think it is spelled.

The instructor continues dictating words ranging in difficulty from one to five-syllable words for a total of 42 words. The students are given credit for correctly spelled words plus good phonetic equivalents (GFE).

After the eight-week intervention, students took the AAT and WRAT-4 spelling as post-tests to investigate the effectiveness of this phonological awareness approach to vocabulary acquisition.

Each 30-minute session focused on segmenting spoken words by syllables and using the initial teaching alphabet (i.t.a.) to transcribe spoken words to good phonetic equivalents. The instructor orally announced 8-10 content vocabulary words while the students segmented the sounds using a method called Slash and Dash [8]. When the instructor announced each word, the students made a slash mark for each syllable they heard. They then transcribed the sounds they heard by using the Initial Teaching Alphabet (i.t.a.) chart to find the correct symbol that represented each sound and recorded the symbols according to syllable. This process took approximately 30 minutes per class session. The second part of the session, approximately 15 minutes, focused on finding the proper spelling of the words using iPads or online dictionaries. Fig. 2 depicts the phonetic alphabet (i.t.a.) used in this investigation.



Figure 2. Initial Teaching Alphabet (i.t.a.) chart.

The intervention sessions took place every Tuesday and Thursday for eight consecutive weeks.

3 RESULTS

3.1 Paired sample t-test results

Paired sample t-tests were used to investigate the hypothesis that vocabulary acquisition through the phonological awareness process (Slash and Dash) would result in improvement in students' ability to analyze spoken words by syllable and sound, a key prerequisite to success in reading.

A paired sample t-test was conducted to compare pre and post-test results for the Auditory Analysis Test-Revised (AAT). The AAT assesses the ability to segment spoken words by syllable and sound, a crucial phonological skill underlying success in "cracking the code" of written English.

On this measure, students posted an average gain of 4.5 words in their analysis of spoken words. The level of significance (.054) was close to the .05 level specified by the study design. Given that two students did not complete the post test, and the short time span in applying this intervention, the significance of the results would be considerably greater with increased instructional time.

Table 1. Results of the paired-sample t-test (n=7) for the Auditory Analysis Test-Revised (AAT).

	Mean	Std. Deviation	Significance
AAT1 (pretest)	27.6	6.6	.054
AAT2 (post-test)	31.1	5.7	

A paired sample t-test was conducted to compare students' ability to write phonetic equivalents (GFEs) for polysyllabic words dictated by the instructor. Table 2 depicts the statistically-significant gains from pre to post-test.

Table 2. Results of the paired-sample t-test (n=9) for Good Phonetic Equivalents (GFE) of misspellings on the WRAT spelling test. /i.

	Mean	Std. Deviation	Significance
GFE1 (pre-test)	4.1	2.4	.001
GFE2 (post-test)	5.8	2.9	

Therefore, the results of this investigation indicate there is a high probability that the intervention resulted in higher outcomes, both in students' ability to analyze spoken words (phonological awareness), and to transcribe these words as phonetic equivalents (GFEs).

3.2 Graphical Presentations of Results

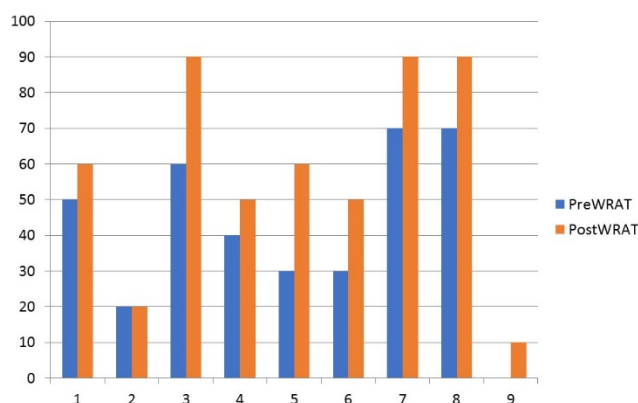


Figure 3. Percentage of Good Phonetic Equivalents.

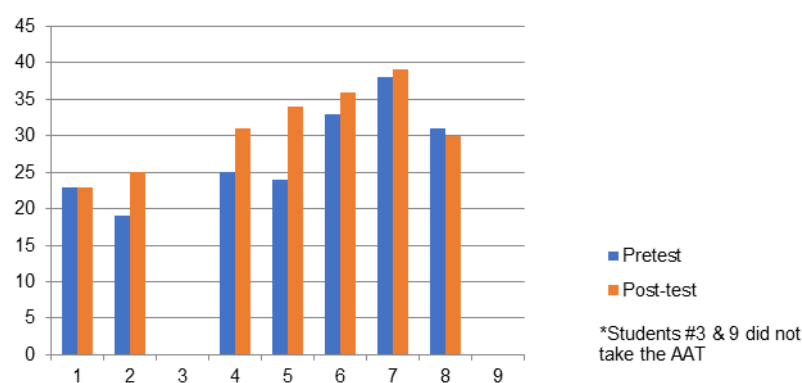


Figure 4. Students' AAT Raw Scores.

4 CONCLUSIONS

When the instructor began the implementation of the Slash and Dash intervention, she observed an enthusiasm the students projected toward the Slash and Dash activity. Students made the following comments during the eight-week intervention:

- "I have never learned this before."
- "It's fun to see how the words break down."
- "I love the ITA symbols because the sounds are always the same."
- "I feel like I know what I am doing."

These are verbatim statements. Other benefits observed were the increase in class attendance during the intervention as well as the students' increased level of active engagement in the Slash and Dash activity throughout the entire eight-week intervention. While the instructor anticipated some resistance from the students, in fact, such was not the case. They all embraced the intervention.

The results show promise in making changes in the assessment, curriculum, and instruction in academic developmental reading courses. Providing appropriate diagnostic assessment, incorporating Slash and Dash methodology to strengthen phonological abilities and increase content vocabulary knowledge and reading comprehension are important steps in being more responsive to students' reading needs. Also, collaboration with academic development faculty is critical in making appropriate changes in their collective instructional approaches to directly address students' phonological deficits.

As to the students who participated in this study, they will be better able to take notes during lectures, transcribe unknown words as phonetic equivalents, and find these words later in their electronic devices. These skills all lead to improvement in vocabulary and reading comprehension.

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