

WORDLY WISE 3000[®] ONLINE

EFFICACY STUDY

(Randomized Control Trial)

Putnam Academy of Arts and Sciences

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Supporting Reading, Literacy, and Learning for Over 60 Years



Literacy and Intervention

1. INTRODUCTION

The goal of this study was to evaluate the efficacy of *Wordly Wise 3000® Online* with non-proficient readers in Grades 6-8. The study was conducted during the 2014-2015 school year at Putnam Academy of Arts and Sciences. This report presents a description of *Wordly Wise 3000® Online*, the evaluation design and methods, an assessment of program implementation, student performance results, and a discussion of findings.

1.1 PROGRAM DESCRIPTION

Wordly Wise 3000® Online is a dynamic and interactive program that helps students master the academic vocabulary they encounter in school every day. Full audio support is included throughout the program to help struggling readers or ELL students. Progress monitoring reports are available to teachers and administrators to help target and differentiate instruction.

1.2 SETTINGS

The sample for the study represents non-proficient students from Putnam Academy of Arts and Sciences, a middle school in East Palatka, Florida. A total of three teachers and 55 students (29 treatment and 26 control) in Grades 6-8 participated in the study. The following table represents school characteristics.

Table 1: School Characteristics

Geographic Location and City Description	Rural, Small
Total student enrolment	165
Percent qualified as low income (free/reduced lunch)	61%
Ethnic breakdown	
Asian	0%
Black	27%
Hispanic	3%
American Indian/Alaskan Native	0%
Multiracial	3%
White	67%

2. METHOD

The study evaluated the efficacy of *Wordly Wise 3000® Online* in helping non-proficient readers improve their vocabulary and reading skills. This section describes different study components, including measures, procedures, settings, and participants.

The study addressed the following over-arching evaluation questions:

1. Do students in the treatment groups demonstrate significant learning gains in vocabulary and reading during the study period?
2. How do the vocabulary and reading performances of students in the treatment groups compare to that of students in the control groups?

2.1 RESEARCH DESIGN

The entire student population was pre-tested with the Gates-MacGinitie Reading Test (GMRT) in order to identify their reading proficiency level. The evaluation study then employed a Randomized Controlled Trial (RCT) design that randomly assigned non-proficient students within each grade level to either *Wordly Wise 3000® Online* (treatment group) or the materials teachers used during their “business as usual” classroom instruction (control group). The randomization of students was done at the grade and class level.

2.2 MEASURES

A combination of qualitative and quantitative methods was included in the study design in order to allow for a full understanding of the impact of *Wordly Wise 3000® Online* on students’ vocabulary and reading abilities. This section describes these measures.

Student Measures

Gates-McGinitie Reading Test (GMRT) was employed to assess changes in students’ vocabulary and reading skills. The GMRT is a norm-referenced, group-administered online reading test that was chosen for this study. It is widely used and well-recognized in the field, and its assessment areas (vocabulary and general reading ability) parallel with the instructional focus of *Wordly Wise 3000® Online*.

There are two versions of the test. By administering different versions of the test in the fall and the spring, students’ performance changes during the year can be determined. Scoring is automated.

2.3 PROCEDURES

This section describes procedures followed for various study aspects, including site selection, data collection, training, implementation, test administration, and scoring.

Site Selection

Specific site selection criteria were set up in order to guarantee a student population and settings that are typical of *Wordly Wise 3000® Online* users. These are:

1. Implementation of *Wordly Wise 3000® Online* in Grades 6-8
2. Teachers’ completion of implementation training

3. Schools' commitment to implement the program with fidelity: student training in *Wordly Wise 3000® Online* three times a week for daily sessions of 30 minutes
4. Teacher comfort with random assignment of students to groups No other primary research studies occurring
5. No other primary research studies occurring

Data Collection Timeframe

Table 2 represents the timeline of training and data collection activities. The study orientation was done within the first month of school. Following the orientation, the student measures were administered to all students. After the random assignment of students into study groups was completed, the product training occurred. Initial teacher training for the *Wordly Wise 3000®* started in November of 2014, and was led by a certified *Wordly Wise 3000®* specialist. After the training, implementation of *Wordly Wise 3000® Online* began.

Table 2: Timeline of Data Collection Activities

Task and Activity	August	September	October	November	December	January	February	March	April	May
Study orientation		√								
Administration of student measures				√					√	√
Assignment of students into study groups			√							
Teacher training begins			√							
Student training begins				√						
End of Study										√

Test Administration and Scoring

Teachers were presented with an overview of tests, including instruction for administration, make-up testing, accommodation for students with Individualized Education Program plans, and assessment return.

Implementation Fidelity

In order to ensure that *Wordly Wise 3000® Online* was implemented with fidelity, various implementation-monitoring procedures were used. These included regular checks of the database created with the product's automated online data collection.

The implementation fidelity is characterized by the extent to which students used the program (Table 3). An automatic *Wordly Wise 3000® Online* data collection database measured these aspects of implementation. These include time in program, number of lessons completed, etc. All these fidelity measures are saved every time a student logs in and their total is updated with the completion of every task by a student.

Table 3: *Wordly Wise 3000® Online* Fidelity Measures by Group

Group	N	Time in Program (hr)	LessonsCompleted
Treatment	29	13.1	6.28
Control	8	0.50	0.0

Note: Eight control group students spent some time on *Wordly Wise 3000® Online* at the beginning of the study, but they did not complete any lessons.

Implementation Guidelines

Teachers received implementation guidelines before the beginning of the study that asked them to use the program for a minimum of 30 minutes, three times a week.

Students were placed at their instructional level on the program based on their GMRT test score. In other words, if a student's Total Grade Level Score on GMRT was 4, then the student would be placed on Level 4 of *Wordly Wise*.

Professional Development

EPS Literacy and Intervention curriculum specialists designed the implementation model for *Wordly Wise 3000® Online*. This model is used by the professional development team and it is based on hundreds of program implementations.

Wordly Wise 3000® Online is designed to allow teachers to use the program without additional professional development by using the online resources and video instruction.

However, professional development is available if desired by schools. A certified *Wordly Wise 3000® Online* implementation specialist was chosen to provide the site with training and support consistent with typical *Wordly Wise 3000® Online* services to schools, should they choose to have on-site support.

2.4 PARTICIPANTS

The final student sample for the study included 55 students in Grades 6-8. Table 4 shows the distribution of students in the treatment and control groups by grade.

Table 4: Distribution of Students by Grade and Group Assignment

Grade	Treatment	Control
6	10	9
7	11	7
8	8	10
Total	29	26

The school Principal/Director was the primary contact for study-related issues. Responsibilities included ensuring that materials were distributed and assessments and program were being implemented correctly, among others.

A sample of three teachers contributed to the study.

3. STUDENT PERFORMANCE RESULTS

In order to address the study questions pertaining to student performance appropriately, various analyses were conducted, including descriptive, inferential, and multi-level analyses. This section begins with a presentation of student performance among treatment students only, and concludes with the results of comparisons between treatment and control students.

3.1 WORDLY WISE 3000® ONLINE'S IMPACT ON LEARNING

Although student improvement was demonstrated through the use of gain scores throughout this study, the treatment and control groups should be equivalent on all outcome measures at the outset of the study. Table 5 displays treatment and control students' pre-test scores on all outcomes for the current study. Overall, students in both groups were equivalent on total reading and vocabulary outcomes at pre-test.

Table 5: Pre-Test Academic Performance Measures by Group

Measure (ESS)	Treatment			Control			t	df	p-value
	n	Mean	SD	n	Mean	SD			
GMRT Total	29	489.00	23.47	26	502.96	17.45	-2.47	53	.45
GMRT Vocabulary	29	493.58	16.38	26	502.53	18.19	-1.92	53	.91

This section presents the learning gains of non-proficient students who participated in the *Wordly Wise 3000® Online* program in the 2014-2015 school year. Results are presented for student performance on the GMRT reading test.

Question 1

Do students in the treatment group demonstrate significant learning gains in vocabulary and reading during the study period?

As indicated previously, a randomized control trial was conducted in Putnam Academy of Arts and Sciences. Teachers in this school followed explicit implementation guidelines to ensure program fidelity. To address whether non-proficient students who participated in the *Wordly Wise 3000® Online* program demonstrated significant learning gains in reading and vocabulary from the beginning of the study to the end of the study, gains on various subscales of the GMRT were calculated. Specifically, descriptive analyses were conducted on the Extended Scaled Scores (ESS), the Total Test and Vocabulary parts of the GMRT.

Descriptive Analysis

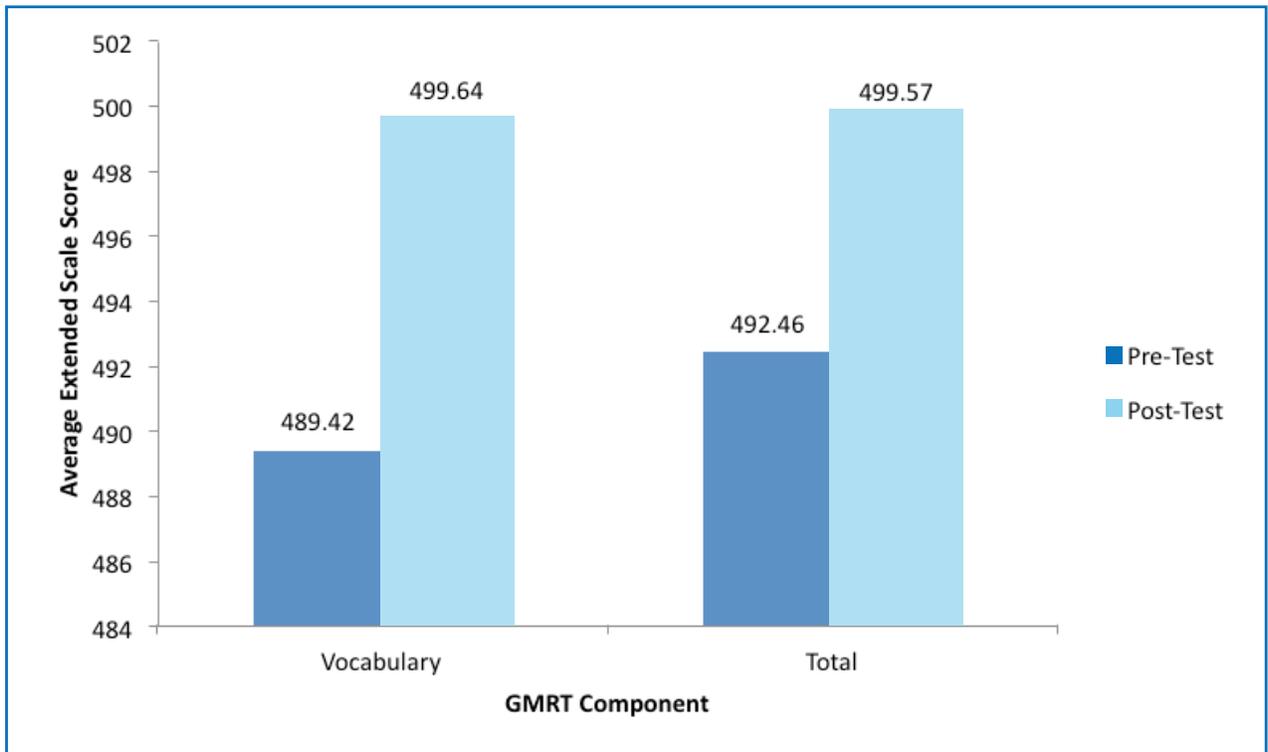
As shown in Table 6, students participating in the *Wordly Wise 3000® Online* program improved in reading on average by 7.11 points in extended scaled score (ESS) of GMRT and 10.21 points in vocabulary. This improvement is equivalent to 0.53 grade levels in reading during the study and 0.63 grade levels on vocabulary (see Figure 1 ESS pre-test scores). These gains on the GMRT were significant (all $p < .05$).

Table 6: Mean GMRT Gains for Treatment Students

Outcome Measure	Gains (Mean)	Standard Error	t-value	Approximate df	p-value
Total Score (ESS)	7.11	2.54	2.79	25	0.01*
Vocabulary (ESS)	10.21	3.07	2.75	27	0.01*
Total Score (GE)	.53	.19	2.78	25	0.01*
Vocabulary (GE)	.63	.23	2.75	27	0.01*

* Significant at the 0.05 level

Figure 1: Students’ Gates-MacGinitie Pre-Test and Post-Test ESS Scores



3.2 STUDENT LEARNING COMPARISON

This section of the report presents analyses to examine differences between the performance of treatment and control students on the GMRT. The purpose is to determine whether participating in *Wordly Wise 3000® Online* resulted in significantly higher performance on the GMRT than “business as usual” classroom instruction.

Question 2

How do the vocabulary and reading performances of students in treatment groups compare to that of students in control groups?

Descriptive Comparisons

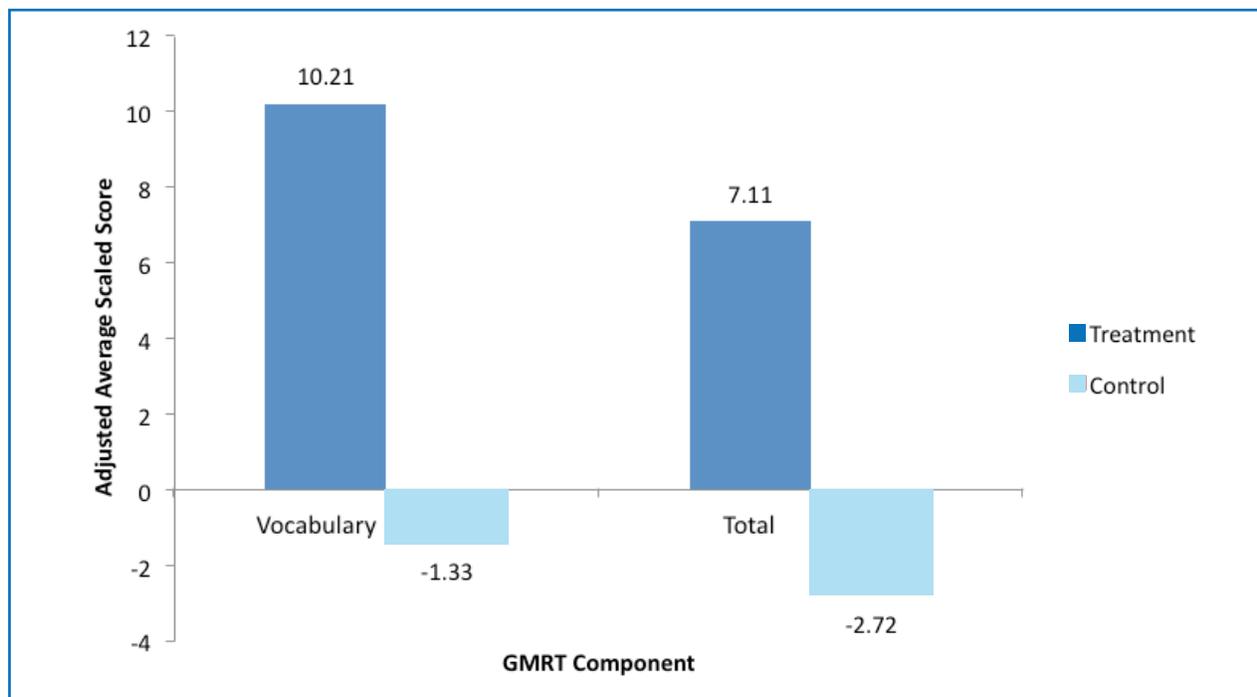
As presented in Table 6 and Figure 2, results reveal that treatment students scored higher, on average, than control students by the end of the study on Vocabulary and Total GMRT subtests. The average gains of the treatment groups were positive, while the control groups students' performance dropped. The average gains of the treatment groups are significantly higher than the gains of the control groups on ESS total score. The difference between average gains of the treatment groups and the control groups was marginally significant on the GMRT ESS vocabulary subtest (see Table 7 for p values).

Table 7: Mean GMRT Gains for Treatment Students

Outcome Measure	Treatment Group Gains (Mean) N=28	Control Group Gains (Mean) N=18	t	Approximate df	p-value
Total Score (ESS)	7.11	-2.72	2.98	42	0.02*
Vocabulary (ESS)	10.21	-1.33	1.96	44	0.05†

† Marginally significant, * Significant at the 0.05 level

Figure 2: Student's ESS Gains on GMRT Subtests by Group



Limitations of Study

There are limitations for this evaluation study that readers should take into account when interpreting the study's results. The sample size had sufficient power to detect main effects of the program by condition. However, the attrition rate for the control group students was 31%. In addition, eight students from the control group spent on average 30 minutes on *Wordly Wise 3000® Online* at the beginning of the study.

4. CONCLUSION

This study of *Wordly Wise 3000® Online* was conducted to measure the effectiveness of the program on non-proficient students who are struggling readers and are performing below their grade level. Putnam Academy of Arts and Sciences in Florida participated in the study. The findings in the report represent a sample of 55 students in Grades 6-8 who were involved in the randomized controlled trial of *Wordly Wise 3000® Online*. Students were randomly assigned to treatment or control groups for the 2014-2015 school year.

The students who participated in *Wordly Wise 3000® Online*, compared to students in the control groups, demonstrated significant learning gains during the study period. Students' improvement in general level of reading achievement, overall reading abilities, and vocabulary were significant by the end of the study. These results indicate that participating in *Wordly Wise 3000® Online* for the duration of this study was associated with gains in overall reading ability and vocabulary.

Study findings suggest that the gains experienced by *Wordly Wise 3000® Online* participants, overall, were significantly higher of those experienced by students in the control group receiving “business as usual” classroom instruction.

In sum, the results of this study indicate that *Wordly Wise 3000® Online* is useful to teachers in providing a comprehensive intervention to struggling readers. Teachers and students adapt easily to the program structure, pace, and routine. Results indicate that the program is successful in significantly improving students' vocabulary as well as general level of reading skills

5. ACKNOWLEDGEMENTS

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