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Implementing Spelling with Morphographs with Above-Average Students in Grade 2: Implications for DI of Comparisons with Demographically Similar Control Students in Grades 2-3-4-5

Abstract: This study investigated whether the use of *Spelling Through Morphographs* (Lessons 1-45) designed for grade 3–adult students could be effective when implemented in an above-average educational setting with grade 2 students. Using a cross-grade, longitudinal design, designed to provide a methodological foundation for addressing the acceleration of student learning, the study compared the achievement of grade 2 experimental students on a criterion-referenced spelling test with demographically similar control students in grades 2 through 5. Analysis of variance (ANOVA) results found the achievement of the grade 2 experimental students significantly higher than both grade 2 (effect size = 2.95) and grade 3 (effect size = 2.04) controls, with no significant difference found between grade 4 and grade 5 controls. Discussed are implications of the cross-grade design and the findings for potentially affecting the advocacy of school decision makers for *Spelling Through Morphographs* in particular and Direct Instruction (DI) programs in general.

In considering spelling as a curricular area of recognized importance (Fresch, 2007; O'Sullivan, 2000; Shippen, Reilly, & Dunn, 2008), the education research relating to spelling instruction in general and Direct Instruction (DI) spelling programs in particular reflects three major perspectives. These perspectives are important because they suggest different criteria for evidence-based decision making by schools through which effective instructional interventions are identified (see Slavin, 2008a, 2008b). In particular, these different criteria have important implications for the adoption of DI programs (see Vitale & Kaniuka, 2009), which are performance-validated as effective within the DI development process (Engelmann & Carnine, 1982).

The first perspective approaches spelling instruction in a generic fashion by studying factors that affect how successfully students can learn to spell specific words that are taught through combined phonemic/whole-word approaches. This broad perspective has been addressed in (a) comprehensive literature reviews (Invernizzi & Hayes, 2004; Schlagal, 2002; Simonsen & Dixon, 2004; Simonsen & Gunter, 2001; Simonsen, Gunter, & Marchand-Martella, 2008; Steffler, 2001; Templeton & Morris, 2001; Wanzek et al., 2006); (b) illustrative experimental studies investigating such factors as the selection of spelling words (Wallace, 2006), maintaining student spelling skills (Owens, Fredrick, &

Shippen, 2004), using rule-based vs. tradi-
tional teaching strategies (Darch, Eaves,
Crowe, Simmons, & Conniff, 2006), and
recombining syllables to improve spelling
recall (Hanna, de Souza, de Rose, & Fonseca,
2004); and (c) nonexperimental studies pre-
dicting success in spelling from
instructional/teaching variables (Foorman et
al., 2006) and monitoring the variability and
change in student spelling strategies
(Farrington-Flint, Stash, & Stiller, 2008).
Within this perspective, the purpose of
research in spelling is to provide evidence-
based approaches that can be applied to
improve the forms of spelling instruction
presently used by schools.

The second perspective expands the scope of
spelling proficiency and the associated dynam-
ics of spelling acquisition by considering
spelling as an aspect of student language
development. Representative examples of this
linguistic approach to spelling have been out-
lined by a number of sources in the literature
(Arra & Aaron, 2001; Deacon & Bryant, 2005;
Invernizzi & Hayes, 2004; Templeton &
Morris, 2001). Of particular relevance is the
fact that one primary focus of such research
has been on the linkage of student morpho-
graphic awareness to spelling proficiency. For
example, such research has investigated the
effect of morphographic awareness training on
spelling (Arnbak & Elbro, 2000), student use
of morphemic knowledge when spelling
(Defior, Alegria, Titos, & Martos, 2008), how
students learn morphographic spelling rules
(Chliounaki & Bryant, 2007), and the predic-
tion of spelling proficiency from student mor-
phographic knowledge (Senechal, Basque, &
Leclaire, 2006). Within this perspective, the
study of linguistic processes is considered a
necessary prerequisite for gaining an under-
standing of the dynamics underlying student
spelling proficiency.

The third perspective approaches the question
of engendering student spelling proficiency
from a different (and solution-oriented) view

that follows from research-validated standards
for the design and development of effective
classroom instruction (see Dick, Cary, & Cary,
2008; Engelmann & Carnine, 1982). Within
this perspective, two important program-
development criteria have to be met for any
instructional intervention to be accepted as
providing effective classroom spelling instruc-
tion. These criteria are that: (a) the desired
(and specific) educational achievement out-
comes, in fact, result from the instructional
intervention, and (b) the intervention is feasi-
ble to implement in authentic school settings.

Ideally, the best information for improving
spelling instruction would be based on the rel-
evance of the research findings from the first
two research perspectives enhancing the effec-
tiveness of instructional programs previously
validated as effective (perspective three).
That is, if the research knowledge produced
by research findings in perspectives one and
two has the capacity to improve instructional
programs validated as effective in perspective
three, then that knowledge has pragmatic
value to schools. However, if the outcomes of a
validated instructional program exceed the
implications from research for improving cur-
rent practice, then such research, although
valid in its own right, has little, if any, practical
value (see also Engelmann, Bateman, & Lloyd,
2007). The problem relating to the adoption
of DI programs through evidence-based deci-
sion making by schools is that research find-
ings from perspectives one and two are
emphasized (e.g., Florida Center for Reading
Research, 2008). From this approach, the evi-
dence of effectiveness of a DI spelling pro-
gram would be determined by the degree to
which the characteristics of the program were
consistent with the relevant research findings
in perspectives one and two (e.g., rule-based
strategies, morphographically-based approach)
rather than on the established, empirical
validity of the program.

In fact, two DI instructional programs in
spelling meet the validation criteria outlined

for perspective three: (a) *Spelling Mastery* (Dixon & Engelmann, 1999), a developmental, grade K-5, morphographic-oriented program, and (b) *Spelling Through Morphographs* (Dixon & Engelmann, 2001), a 140-lesson, grade 3-adult program. As detailed by Simonsen and Dixon (2004), Simonsen and Gunter (2001), Simonsen et al. (2008), and Shippen et al. (2008), both programs are based on DI development principles (Engelmann & Carnine, 1982), which involve an iteration of extensive field-test/program revision cycles that, when completed, provide empirical confirmation of effectiveness and implementation feasibility in authentic school settings. In evaluating the degree to which sources within the three different perspectives provide evidence-based information useful to schools for improving spelling instruction, the empirical validation of DI programs as effective during development is much more useful evidence than information resulting from studies within perspectives one and two that attempt to enhance approaches typically used by schools.

The present mandate in educational reform for schools to use evidence-based instruction (e.g., Institute of Education Sciences (IES)—What Works Clearinghouse, 2008) would imply that *Spelling Through Morphographs* for grade 3–adult (and *Spelling Mastery* for K-5) would be recognized by school decision makers as among the best of available instructional alternatives. However, as with DI programs in general (see Adams & Engelmann, 1996; Engelmann, 2007), this is not the case. Rather, as Hirsch (1996, 2006) noted, educational practitioners operate within a well-established intellectual "thoughtworld" that, as a type of paradigm (see Kuhn, 1996), provides intellectual and affective resistance that is difficult to overcome (see Chinn & Brewer, 1993, 1998; Engelmann, 2003; Vitale & Kaniuka, 2009).

One reason for using *Spelling Through Morphographs* in the present study is that the design rationale underlying the curricular scope of spelling proficiency engendered

through the programs is both educationally unique and instructionally powerful (Simonson & Dixon, 2004). In *Spelling Through Morphographs*, students learn a total of 673 morphographs in 140 lessons. Such morphographs consist of base words (e.g., *copy, serve, might*), nonword bases (e.g., *cept* as in *acceptable*), prefixes (e.g., *ac-* as in *acceptable*), and affixes (e.g., *-able* as in *acceptable*) and are supported by a total of 14 complementary spelling rules (e.g., *When a word ends in **e** and you add a morphograph that begins with a vowel letter, drop the **e***). As a result of learning to combine the morphographs learned and to apply the spelling rules appropriately, students learn to spell through a generative and primarily combinatorial process (e.g., *ac + cept + able = acceptable; like + ly = likely, like + able = likable*) more than 16,000 words.

One important reason for the learning outcomes engendered by *Spelling Through Morphographs* is that spelling in English is very consistent when a morphemic structural approach is used. As a result, students learn to combine morphographs to spell complex words and, in doing so, to apply the highly consistent morphographic-oriented spelling rules when necessary. Considered in combination with research-based DI teaching principles (e.g., explicit formats for learning tasks, pacing appropriate for student learning, use of signals to manage group instruction, use of correction procedures to ensure student mastery, cumulative review), *Spelling Through Morphographs* is a program that offers schools a feasible approach to ensure students learn to spell. In doing so, the instructional benefits to students are well beyond those associated with limited, traditional phonemic-based or word-based approaches presently used by schools (see Simonsen & Dixon, 2004; Simonsen & Gunter, 2001; Simonsen et al., 2008).

The present study uses the *Spelling Through Morphographs* program as a means of exploring a methodological enhancement of previous experimental research involving a DI program

(see Vitale & Kaniuka, 2009) as a basis for broadening the views of educational decision makers regarding the DI spelling intervention. While there are research studies demonstrating that DI spelling programs, including *Spelling Through Morphographs*, have accelerated student spelling achievement (see Simonsen & Dixon, 2004), no study has compared achievement outcomes of younger students receiving DI spelling to the performance of older students as a means of establishing the degree of achievement acceleration.

In doing so, the study had two specific goals. First, the study addressed the question of whether the *Spelling Through Morphographs* program, which was designed for grade 3–adults, could be implemented effectively in an above-average educational setting with grade 2 students. Implementation of the program with grade 2 students would demonstrate one aspect of achievement acceleration along with the program applicability to above-average students. Second, the study applied a cross-grade, longitudinal design involving control students across grades 2, 3, 4, and 5 (vs. just a comparison of grade 2 experimental and control students) based on general suggestions offered by Vitale and Joseph (2008). In principle, such a cross-grade comparison could amplify the degree to which the findings of the *Spelling Through Morphographs* intervention could be shown to accelerate the academic progress of students in grade 2 in a manner that would provide a foundation for the acceleration of academic progress in subsequent grade levels.

Method

Participants

The participating school was a medium-sized K-5 elementary school (N = 1107) located in a large urban school system in southeastern Florida. A total of 76% of students were white, 18% African American, and 4% Hispanic. A total of 18% of students received free or reduced-price lunch. The achievement level of the school was above average, with 71% of students scoring above the median on the California Test of Basic Skills (CTBS) Reading Comprehension subtest, which was administered district-wide in grades 3, 4, and 5 during the preceding school year. The mean school CTBS Percentile Rank across grades 3, 4, and 5 was 68. The overall school absentee rate of 5% was consistent across ethnicities and grade levels.

Spelling Through Morphographs Intervention

The experimental intervention consisted of Lessons 1-45 of *Spelling Through Morphographs* (Dixon & Engelmann, 2001), implemented in a 45-minute, whole-classroom setting over approximately 90 instructional days (i.e., taught every other day). Because the purpose of the study was to demonstrate the effectiveness of the DI spelling program with above-average grade 2 students, researchers modified the program-recommended placement criteria. Rather than eliminating students who obtained 4 or more errors on Part A of the program Placement Test (as specified by the program guidelines), researchers allowed 18 of the 21 students who had sufficient language skills to correctly sound out the words and nonwords in Part A to participate. The remaining 3 students were given alternative spelling assignments in a different classroom during spelling instruction. Otherwise, the implementation of the program followed all of the guidelines outlined in *Spelling Through Morphographs*, including both teacher presentation (e.g., formats, pacing, signaling, corrections) and use of the student workbook.

Instrumentation

A researcher-developed *Mastery Spelling Test* (*MST*) was used to measure student spelling achievement. The *MST* was a 40-item, criterion-referenced test consisting of words sampled randomly from Appendices A, B, and C in the *Spelling Through Morphographs: Student Workbook* (Dixon & Engelmann, 2000), which

presented examples of possible words students would have learned to spell generatively by using the morphographs (base words, nonword bases, prefixes, suffixes) and spelling rules taught in Lessons 1-35. Although students were taught Lessons 1-45, the content of the *MST* was limited to Lesson 35 to ensure students had the opportunity to master the content tested. Across the scope of Lessons 1-35, the words sampled for the test represented a total of 103 base words, 25 nonword bases, prefixes and suffixes, and 3 morphographic-based spelling rules (*Final E Rule, Doubling Rule*, and *Vowel Consonant Rule*). Among the 40 test items, 10 items consisted of a base morphograph (e.g., *choice*), 25 items consisted of a base combined with 1 nonword base, prefix, or suffix morphograph (e.g., *formless*), and 5 items consisted of a base combined with 2 nonword base, prefix, and/or suffix morphographs (e.g., *packaging*).

In the teacher-administered test, each item was presented to students in a regular classroom setting using the following three-step procedure: (a) teachers read the item number and the word aloud to the class, (b) teachers then read a sentence that included the word, and (c) teachers then reread the word a second time. After the teachers reread the word, students wrote their spelling of the word on their answer sheets.

Design/Procedure

Prior to the start of the study, the school had assigned students to teachers/classrooms through a process that ensured all classrooms within a grade level were balanced demographically with regard to ethnicity, gender, free or reduced-price lunch qualification, and student ability. The school assignment process for each grade was implemented through a joint meeting of all teachers at a specific grade level and all teachers at the preceding grade level who jointly determined student assignments in a manner that ensured the equivalence of classrooms.

In the study, one grade 2 classroom was randomly selected for the *Spelling Through Morphographs* intervention, and a second grade 2 classroom was selected as a control. Completing the design, one classroom from grade 3, grade 4, and grade 5 was randomly selected to provide grade-level controls. Spelling instruction in the four control classrooms followed district curricular guides, which specified teachers were to create spelling word lists from regular basal spelling materials and then test student spelling mastery on those spelling words on a weekly basis.

The grade 2 teacher implementing *Spelling Through Morphographs* received initial training and follow-up support from the researchers who were experienced DI trainers. The initial training was distributed over a two-week period prior to implementation, during which the trainer and teacher met after school. The training primarily focused on presenting and pacing program formats, the appropriate use of signals, and the use of error correction procedures for mastery teaching. Prior to beginning the intervention during the second week in September, the researchers completed the study-modified placement testing procedure for all students. The intervention was implemented on alternate school days and completed during the first week of December. During the implementation, the researchers monitored the 45-minute lessons on a continuing basis at least twice a week to ensure fidelity, and they met briefly with the teacher to provide feedback as necessary.

The *MST* spelling achievement test was administered by the regular grade 2 experimental and grade 2-3-4-5 control teachers one week after the completion of the intervention. The school principal scheduled testing on specific days to allow the researchers to monitor the testing. All students enrolled in the experimental and control classrooms were tested to ensure comparability across the experimental and control classrooms. That is, for the experimental grade 2 classroom, both students who

met placement requirements established by the researchers and received the intervention and students who did not (N=3) were included in testing. The tests were hand-scored and transferred to an Excel spreadsheet for import to SYSTAT 12 for analysis.

Results

Table 1 shows the number and percent of correct responses on the *MST* criterion measures. As Table 1 shows, the mean number correct ranged from 33.1 (83% correct) for the Experimental Grade 2 classroom to 14.1 (37% correct) for the Control Grade 2 classroom.

A one-way ANOVA comparing *MST* achievement of the five classrooms (1 experimental, 4 controls) found significant overall differences among classrooms, $F_{4, 115} = 35.27, p < 0.001$. A single degree of freedom contrast comparing the *MST* achievement of the experimental grade 2 classroom to all four control classrooms (grade 2, grade 3, grade 4, and grade 5) found a significant difference in favor of the Experimental Grade 2 classroom, $F_{1, 115} = 38.02, p < 0.001$.

Post-hoc Bonferroni *t*-tests (see Table 2) contrasting the Experimental Grade 2 classroom with the group of controls in grades 2, 3, 4, and 5 showed that the performance of the Experimental Grade 2 classroom was significantly greater than the controls in grade 2 and grade 3. No significant difference was found between the Experimental Grade 2 classroom and the controls in grades 4 and 5. As also shown in Table 2, *effect sizes* (Cohen, 1988) for the significant differences between the Experimental Grade 2 classroom and the Control Grade 2 and Grade 3 classrooms were in the "high" category (using Cohen's guidelines).

Figure 1 illustrates the baseline growth in *MST* spelling achievement across grades 2, 3, 4, and 5 for the control classrooms, which followed the district curricular guidelines in comparison to the *MST* achievement level of the grade 2 experimental classroom, which received *Spelling Through Morphographs*.

Discussion

Although limited in size, the results of this study have implications that are far broader

Table 1

Number and Percent of Correct MST Responses for the Grade 2 Experimental and the Grades 2, 3, 4, and 5 Control Classrooms

Group	Grade	N. Correct		Pct. Correct	
		M	*SD*	*M*	*SD*
Experimental	2	33.1	3.9	83	0.10
Control	2	14.1	8.3	37	0.24
	3	20.5	6.8	51	0.17
	4	29.8	5.5	74	0.14
	5	30.7	5.7	77	0.14

Note. Class size for grade 2 = 21, for grades 3, 4, 5 = 26.

than just demonstrating that Lessons 1-45 of *Spelling Through Morphographs* (Dixon & Engelmann, 2001) have the potential to increase the spelling proficiency of grade 2 students. Rather, the primary conclusion of this study is that the spelling proficiency of above-average grade 2 students can be accelerated significantly beyond those of grade 3 (*Effect Size* = 2.04) as well as grade 2 (*Effect Size* = 2.95). Moreover, it is important to note that the *MST* achievement of grade 2 experimental students receiving *Spelling Through Morphographs* was not significantly different than that displayed by grade 4 and grade 5 students receiving traditional spelling instruction.

In interpreting these implications, two important contextual considerations should be noted. Because of these considerations, the implications based on the findings of the present study are necessarily conservative. The first consideration is that the student ability levels of the control classrooms across grades 2, 3, 4, and 5 were above average as measured by the *CTBS Reading Subtest.* Therefore, as a basis for comparison, a reasonable assumption is that the control students in grades 2 through 5 in the above-average achieving school made strong academic progress on their overall district-required curriculum.

The second consideration is that the results of this study were obtained by implementing only Lessons 1-45 of the total 140 lessons of *Spelling Through Morphographs* (i.e., approximately 33% of the complete program). In exploring this consideration, Simonson and Dixon (2004, p.184) noted that students completing the first half of the program (i.e., Lesson 70) would have learned 252 morphographs that, along with application of the nine spelling rules learned through Lesson 70, would allow them to spell more than 3,000 words (along with parts of thousands more). However, after completing the second half of the program (Lessons 71-140), students would

Table 2

Post-Hoc Bonferroni Test of Mean Differences in Number of Correct MST Items Contrasting the Grade 2 Experimental Classroom with Each of the Grade 2, 3, 4, and 5 Control Classrooms

Comparison	Mean Diff.	t value[1]	p value[2]	Effect[3]	95% Confidence Interval
G2 Exp. vs. G2 Cont.	18.2	9.55	0.000 *	2.95	12.7 – 23.8
G2 Exp. vs. G3 Cont.	12.6	6.98	0.000 *	2.04	7.5 – 17.8
G2 Exp. vs. G4 Cont	3.3	1.84	0.689	0.53	-1.9 – 8.5
G2 Exp. vs. G5 Cont	2.4	1.35	0.180	0.39	-2.7 – 7.6

[1] df = 115

[2] The Bonferroni p-Value required for controlled significance at the 0.05 level = 0.00125

[3] Cohen (1988) d-Value = Mean Diff./SD(Error = 6.17)

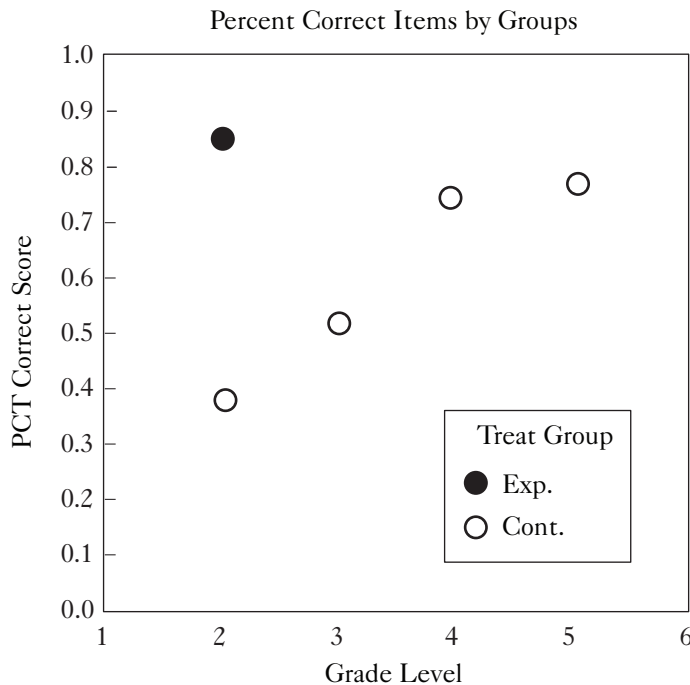* Statistically significant difference

be able to spell approximately 16,000 words (i.e., 13,000 more words) by selectively combining the total of 673 morphographs learned in conjunction with the 14 spelling rules presented in the program, a substantially accelerated rate of achievement for the 70 additional 45-minute instructional days. As a generalized interpretive argument coupled with the empirical findings of the present study, the implementation of the complete (140 lessons) *Spelling Through Morphographs* program in grade 2 would be expected to have even greater implications for grades 3, 4, and 5.

Before considering limitations and directions for further study, the relevance of spelling research from perspectives one and two presented earlier should be addressed. In fact, as noted earlier, many of the consensus research findings within perspectives one and two are consistent with the design and validation of *Spelling Through Morphographs.* However, given the implications of this study, such research findings have no practical significance unless they are able to provide a foundation for either (a) improving the effectiveness of *Spelling Through Morphographs* itself or (b) developing one or more alternative spelling programs whose instructional outcomes (e.g., less instructional time for the same outcomes, broader scope of outcomes in the same instructional time) are demonstrated as more effective than *Spelling Through Morphographs.*

In particular, for perspective two, which emphasizes a linkage between student linguis-

Figure 1

Percent correct on the MST for the Experimental Grade 2 Classroom and for the Control Grade 2, 3, 4, and 5 Classrooms

tic knowledge and spelling, the clearly identifiable research theme linking morphemic knowledge to spelling proficiency may have value in its own right. But, as Engelmann et al. (2007) argued, such findings have no pragmatic implications until their value is established in authentic classroom settings. Keeping perspective three in mind, educational practitioners evaluating the potential value of *Spelling Through Morphographs* would be able to use the findings of this study to make sound decisions having implications for curricular policy involving spelling instruction by attending solely to the accelerated academic outcomes resulting from it.

A major point of this study is that the cross-grade design consisting of direct comparisons of academic performance outcomes between the experimental and control classrooms at the same grade level, complemented by comparisons with the academic performance of grade-advanced students on the same outcomes, provides a dynamic framework for evaluating not only *Spelling Through Morphographs,* but also any DI program that accelerates the rate and scope of student learning. As Vitale and Joseph (2008) and Vitale and Kaniuka (2009) have shown, practitioners who viewed content samples of DI programs were able to perceive that such programs would result in a substantial academic advancement of students in comparison to traditional curricula, a view that applied across a range of SES levels. In this regard, the design strategy of using DI programs with above-average student populations has much to recommend it because in such settings, implementations with fidelity can be accomplished more readily, and under such circumstances the academic gains resulting from DI programs can be magnified.

Several limitations of this study should be addressed in future research. First, limitations in the length (45 lessons) of the present study should be addressed through replications that implement the complete 140-lesson *Spelling Through Morphographs* program in grade

2 and, in a complementary fashion, expand the lesson range of the *MST* from 1-35 to 1-140. Such studies should include *MST* comparisons with demographically similar controls in grades 2-5, as was done in this study. The results of such studies would be expected to magnify the experimental *effect sizes* found in the present study.

Overall, the importance of conducting general DI research in which students complete the upper levels of the program being investigated has been noted by Vitale and Kaniuka (2009). In cases in which multi-level (developmental) DI programs have been implemented cumulatively across several years, addressing this need is simply a matter of disaggregating and presenting data (vs. reporting year-by-year findings by grade) and adding comparable control groups receiving traditional (non-DI) instruction to the data presented for a specific school year. In other cases, particularly those involving multi-year, remedial applications such as *Corrective Reading* (Engelmann, Carnine, & Johnson, 1999), evaluative studies should be conducted in which the student participants complete the highest levels of the program (e.g., Decoding C, Comprehensive C) and their cumulative academic progress is compared to controls. In fact, the majority of DI research does not meet these design requirements at this time (e.g., see Przychodzin-Havis et al. [2005] for a comprehensive review of *Corrective Reading* studies).

The second limitation that should be addressed in future research has to do with identifying more effective strategies through which DI programs can be advocated in order to influence school curriculum policy. From the standpoint of curriculum policy, the implications of the present findings support the argument that implementing *Spelling Through Morphographs* in above-average grade 2 classrooms would result in such students becoming highly proficient spellers. And, as a consequence of such accelerated academic outcomes expected in grade 2, the instructional

time allocated for spelling in grades 3-4-5 could be redirected for other purposes.

While this systemic form of curricular policy change should result from the effective implementation of virtually all DI programs because of their "rich" academic content in comparison to traditional curricula (e.g., Vitale & Joseph, 2008; Vitale & Kaniuka, 2009), such changes have not occurred (e.g., compare the academic K-3 goals of *Reading First* [Gamse, Bloom, Kemble, & Jacob, 2008] with the actual results of school-wide implementation of *DI* programs in *Project Follow Through* [Adams & Engelmann, 1996; Stebbins, St. Pierre, Proper, Anderson, & Cerva, 1977]). As suggested by Vitale and Joseph, a major form of research for addressing this issue is to work toward establishing communications and associated judgments of the quality of the content in DI programs from administrators, teachers, and parents, all of whom have potential roles in school decision making and curricular policy. Some forms of such research have been illustrated by several recent studies (e.g., Vitale & Joseph, 2008; Vitale & Kaniuka, 2009). However, through the present, no research has focused on using representative samples of the academic content of DI programs to influence the perceptions and associated decision making/advocacy for DI programs by school decision makers, teachers, or parents.

In general, the rationale for the preceding linkage of DI instruction to school curricular policy follows from work (Bodilly, Glennan, Kerr, & Galegher, 2004; Constas & Brown, 2007; Dede, Honan, & Peters, 2005; Glennan, Bodilly, Galegher, & Kerr, 2004; Romance & Vitale, 2007; Schneider & McDonald, 2006a, 2006b; Vitale & Romance, 2005) addressing the dynamics for establishing the sustainability of research-validated instructional interventions in school settings (i.e., analytic research on "scale up"). Specifically, the "scale up" problem addressed in the literature is that after schools implement research-validated interventions for which effectiveness is well

established, the schools eventually replace these interventions with other interventions for which validity has not been established.

In fact, virtually all DI implementations face this "lack of sustainability" phenomenon at some point (e.g., Ellis, 2005; Engelmann, 2007; Engelmann & Engelmann, 2004; Clowes, 2005). One possible explanation is that the development of school-based implementation capacity and organizational infrastructure necessary to continue DI interventions has not occurred during initial intervention support. In parallel to the issues relating to the sustainability of DI, Vitale and Romance (2005) have raised the importance of working explicitly to establish the systemic "value added" by an instructional intervention as a means of accomplishing sustainability in conjunction with the development of building the school-based capacity to support an intervention. Given the findings and implications of the present study, the research design strategy used is one of many possible approaches for providing evaluative data that can potentially offer a framework for advocating the "added value" that *Spelling Through Morphographs* in particular and DI programs in general provide.

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