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Theory into Practice: Congruency of Research-Based Literacy Instruction in High and Low Performing Schools

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Abstract

Kentucky's goal of reaching academic "proficiency" by 2014 illuminated problematic findings in 2002 reading test scores: 44.30% of middle and 71.25% of high school students scored below "proficient." The research question was, "Do teaching practices in schools with high reading achievement scores differ from teaching practices in schools with low reading achievement scores?" High school reading scores were stratified by region (2) then high/low. Five high schools were randomly selected from each strata (N=20). Feeder schools were added (N=19). 450 of 638 (70.5%) eighth through 10th grade teachers within these schools completed surveys in April 2003. Independent t-test comparisons ($p.<.05$) of 20 survey items found that teachers in high scoring schools reported greater use of three research-based teaching strategies. Teachers in low scoring schools reported greater use of one research-based teaching strategy.

Theory into Practice: Congruency of Research-Based Literacy Instruction in High and Low Performing Schools

As American high school graduates face increasing demands to read a variety of text, from highway signs to hyperlinks, their ability to comprehend what they read is not keeping pace. The Reading scores on the 2002 Kentucky Core Content Tests (KCCT) perhaps best describe the problem under study. Reading is assessed each spring using the Kentucky Core Content Tests (KCCT) at the middle school level in the eighth grade and at the high school level in the 10th grade. The following data, with Kentucky's goal to reach proficiency by 2014 framing the problem, is illuminating. Statewide, 44.30% of the middle school students' 2002 KCCT Reading scores were below "Proficient." Alarmingly, 71.25% of high school students' Reading score fell below "Proficient." (Kentucky Department of Education).

The purpose of this study was to examine the degree to which middle and high school teachers in grades eight through 10 in Western and Eastern Kentucky used research-based strategies to teach reading across the curriculum. Strategies for teaching reading explored in this study were adapted from The National Institute of Child Health and Human Development's (2000) meta-analysis of reading research that used experimental or quasi-experimental methodology or a multiple-baseline design. Through this meta-analysis, strategies were identified that had a statistically significant positive effect on reading comprehension across grade levels.

Since most teachers seem to teach as well as they know how (Allington & Cunningham, 2002), teacher knowledge of effective research-based reading strategies and knowledge of how to use these strategies to facilitate reading across the curriculum may be a key factor in increasing reading levels of high school students. According to Vacca and Vacca (2002), what

the content area teacher does before reading, during reading, and after reading is crucial to active and purposeful reading. Fullan and Hargreaves (1996) reported that student achievement and teacher development are reciprocally related.

Reading is not taught as a separate subject in either middle school or high school in Kentucky. Reading is assumed to be part of the instruction across content areas. Kentucky teachers certified to teach in middle schools are required to complete at least one course in reading pedagogy. However, high school teachers, with the exception of those certified to teach English, are not required to complete a courses in reading pedagogy.

The research question guiding this study was:

1. Do teaching practices in schools with high reading achievement scores differ from teaching practices in schools with low reading achievement scores?

Method

Participants

Teachers in a total of 39 schools (20 high schools, 15 middle schools, and three K-8) were the participants in the study. The teachers taught in either grades eight, nine, or ten. The unit of analysis for the study was the school, thus, teacher responses were aggregated at the school level.

Sampling Plan

A stratified random sampling plan (Airasian & Gay, 2003) was used. The study was focused on two geographic areas of the state (1) Western Kentucky, defined as the school districts in Kentucky's Regional Service Centers 1 and 2; and (2) Eastern Kentucky, defined as the school districts in Kentucky's Regional Service Centers 7 and 8. The 2002 10th grade KCCT

Reading scores were first stratified by Western and Eastern Kentucky. The scores were then sorted from highest to lowest within each geographic region. The 25 highest scoring schools and the 25 lowest scoring schools within each region served as the target sample. A random sample of five (5) high schools were selected from each of the four strata. These 20 high schools, with all of the schools identified as their feeder schools, constituted the randomly selected sample for the study. A feeder school was identified as any school that sends students on to the identified high schools. Three of the 20 high schools were K-12 schools so had no feeder schools; one high school had three feeder schools, and the remaining 16 schools had middle schools which fed into them.

Results

Data Collection.

In the spring of 2003, the teacher survey was distributed to all eighth through tenth grade teachers in the 39 schools in the sample. Members of the research team visited the schools and collected the data at a regularly scheduled teachers' meeting. Six hundred and fifty-six forms were returned. Of these 656 forms, 180 were blank, resulting in 476 completed survey forms. Four hundred and fifty forms were usable, that is, the consent form for the teacher was present and the data were complete. (No data were received from one middle school, thus the N for the school level analyses is 38.) Table 1 presents the number of responding teachers by content area within these 38 schools. Table 2 presents the grade levels taught by teachers responding to the surveys. From the data in these two tables, it is clear that the study was truly across content areas and included teachers in grades eight through ten.

Table 1. *Content Areas Taught by Teachers Responding to the Teacher Survey*

Content Area(s) Taught	***N***
Foreign Language	13
Science	45
Arts & Humanities	16
Mathematics	73
Social Studies	63
English/Language Arts	80
Health/Physical Education	16
Special Education	26
Agriculture	6
Business Education	7
Family/Consumer Science	10
Practical Living	5
Technical Education	11
Reading	8
Music	9
Welding	1
Media Specialist	1
Not Identified	60
Total	450

Table 2. *Grade Level(s) Taught by Teachers Responding to the Teacher Survey*

Grade Level(s) Taught	***N***
Eighth Grade	115
Eighth and Ninth Grade	2
Eighth, Ninth, and Tenth Grade	15
Ninth Grade	41
Ninth and Tenth Grade	177
Tenth Grade	60
Not Identified	40
Total	450

Data Analysis

The responses of 450 teachers to Teacher Survey were aggregated by school. The number of teacher responses within schools ranged from two to 45. The mode was seven per school. The Teacher Survey data were entered into an Excel spreadsheet and uploaded into Statistical Analysis Software (SAS) for analysis on a PC. Cronbach's alpha reliability of 0.85 was calculated for the Teacher Survey using the data from the study. Means and standard deviations were then calculated from the data collected five-point Likert-type item rating scales for the 20 items of the survey. Independent sample *t*-tests were used to test for statistically significant ($p<.05$) differences between the measures for the High Scoring High Schools and Low Scoring Schools (defined by scores on the 2002 KCCT Reading tests).

Results of teacher survey analysis.

The data for the Teacher Survey are presented in Table 3. The Likert-type, five-point, item rating scale ranged from 1="Not at all," 3="To some extent," to 5="A great deal." The differences in the means in Table 3 are all of degree rather than of kind; that is, all of the mean ratings are above the 3.00 "To some extent" rating. The mean ratings for the High Scoring Schools (N=22) in Table 3 indicate that the highest rated item by teachers within these schools was Item 12, "Students increase their knowledge by responding to questions either orally or in writing" (M=4.58, SD=0.31. The item with the highest mean rating in the Low Scoring Schools (N=16) was Item 8, "I give students a specific task to accomplish during the lesson" (M=4.67, SD=0.73).

Table 3. Responses to Teacher Survey Items by High Scoring and Low Scoring Schools

Teacher Survey Item	***High Scoring Schools N=22***		***Low Scoring Schools N=16***		***Test for Statistically Significant Differences***	
	Mean	***SD***	**Mean**	***SD***	**t value**	***p* value**
1. I alter the list of vocabulary words provided by the textbook.	3.48	0.75	3.11	0.65	2.73	***p*=0.0067***
2. I take time to develop vocabulary at the beginning of the lesson.	3.79	0.50	3.90	0.48	-0.744	*p*=0.4578
3. The vocabulary strategies I use actively involve students.	3.83	0.59	3.84	0.41	-0.068	*p*=0.9459
4. I think about the degree and accuracy of prior knowledge my students have before planning the lesson.	4.24	0.50	4.17	0.49	0.389	*p*=0.6993
5. I choose a pre-lesson strategy based on the students' prior knowledge.	3.73	0.43	3.66	0.49	0.418	*p*=0.6786
6. I involve students in some type of pre-lesson strategy.	3.58	0.53	3.61	0.57	-0.188	*p*=0.8520
7. I establish a purpose or motivation for learning before students are asked to read/learn.	4.20	0.50	4.17	0.40	0.231	*p*=0.8121
8. I give students a specific task to accomplish during the lesson.	4.49	0.73	4.67	0.74	-2.331	***p*=0.0172***
9. I provide students with a strategy to keep them actively involved during the lesson.	4.26	0.40	4.30	0.37	-0.378	*p*=0.7075
10. I loop discussion back to pre-lesson activities.	4.27	0.49	4.12	0.50	0.894	*p*=0.3770
11. I encourage students to increase their knowledge by sharing.	4.26	0.42	4.09	0.48	1.126	*p*=0.2677
12. Students increase their knowledge by responding to questions either orally or in writing.	4.58	0.31	4.59	0.37	-0.172	*p*=0.8643
13. Students increase their knowledge by consulting texts or other sources.	4.13	0.37	4.14	0.43	-0.108	*p*=0.9148
14. I provide the opportunity for students to reflect on their learning.	3.90	0.64	3.97	0.38	-0.384	*p*=0.7036
15. I provide the opportunity for students to reflect on the effectiveness of any strategies they used in the lesson.	3.52	0.66	3.38	0.50	0.720	*p*=0.4761
16. I involve students in writing at some point during the lesson.	4.13	0.77	3.87	0.70	2.514	***p*=0.0121***
17 I use grouping (pairs to small groups) successfully to engage students in learning.	4.01	0.35	3.59	0.51	2.973	*p*=**0.0052***
18. I engage students in using context clues for the vocabulary words at some point during the lesson.	3.76	0.50	3.49	0.48	0.828	*p*=0.4130
19. I engage students in using context clues to guide their reading.	3.78	0.51	3.59	0.65	1.054	*p*=0.2991
20. I read aloud to students from a variety of sources.	3.72	0.57	3.72	0.66	-0.022	*p*=0.9830

Note: *Statistically significant *p*<.05

The item with the lowest mean rating by the High Scoring Schools was Item 1, "I alter the list of vocabulary words provided by the textbook" (*M*=3.39, *SD*=0.75). This was also the item with the lowest mean rating by the Low Scoring Schools (*M*=3.05, *SD*=0.50). This finding was indicative of the findings from the data presented in Table 3. There were not large differences in the mean ratings of the survey items by school achievement level.

Statistically significant differences (p<.05).

The teachers in High Scoring schools (M=3.48, SD=1.43) rated their use of the before reading practice of "I alter the list of vocabulary words provided by the textbook" statistically significantly (*p*.<.05) higher than did the teachers in the Low Scoring schools (M=3.11, SD=1.41). (t(36)=2.73, p=.006).

The teachers in High Scoring schools (M=4.13, SD=1.06) rated their use of the general practice of "I involve students in writing at some point during the lesson" statistically significantly (*p*.<.05) higher than did the teachers in the Low Scoring schools (M=3.87, SD=1.08). (t(36)=2.51, p=.012).

The teachers in High Scoring schools (M=3.96, SD=1.11) rated their use of the general practice of "I use grouping (pairs to small groups) successfully to engage students in learning" statistically significantly (*p*.<.05) higher than did the teachers in the Low Scoring schools (M=3.55, SD=1.19). (t(36)=3.66, p=.003).

The teachers in *Low Scoring* schools (M=4.67, SD=0.73) rated their use of the before reading practice of "I give students a specific task to accomplish during the lesson" statistically significantly (*p*.<.05) *higher* than did the teachers in the *High Scoring* schools (M=4.49, SD=0.74). (t(36)=-2.33, p=.017). There were no statistically significant differences between groups on any of other 16 survey items or total scale.

Conclusions.

The answer to our research question is, yes, teaching practices in schools with high reading achievement scores differ from teaching practices in schools with low reading achievement scores. However, the differences were not in a consistent direction. The teachers in the schools with higher scores on the KCCT 2002 10th grade reading test reported statistically significantly ($p.<.05$) more frequent use of three research-based teaching strategies:

- "I alter the list of vocabulary words provided by the textbook."
- "I involve students in writing at some point in the lesson."
- "I use grouping (pairs to small groups) successfully to engage in student learning."

  The teachers in the schools with lower scores on the KCCT 10th grade reading test reported statistically significantly (p.<.05) more frequent use of one research-based teaching strategy:

- "I give students a specific task to accomplish during the lesson."

  There were no statistically significant differences between teacher reported use of research-based teaching strategies by high and low scoring schools on 16 of the 20 items of the survey:

Before Reading:

- "I take time to develop vocabulary at the beginning of the lesson."
- "The vocabulary strategies I uses actively involve students."

Prior Knowledge

- "I think about the degree and accuracy of prior knowledge my students have before planning the lesson.
- "I choose a pre-lesson strategy based on the students' prior knowledge."

- "I involve students in some type of pre-lesson strategy."
- "I establish a purpose or motivation for learning before students are asked to read/learn."

During Reading

- "I provide students with a strategy to keep them actively involved during the lesson."

After Reading

- "I loop discussion back to pre-lesson activities."
- "I encourage students to increase their knowledge by sharing."
- "Students increase their knowledge by responding to questions either orally or in writing."
- "Students increase their knowledge by consulting texts or other sources."

Strategic Reading

- "I provide the opportunity for students to reflect on their learning."
- "I provide the opportunity for students to reflect on the effectiveness of any strategies they used in the lesson."
- "I involve students in writing at some point during the lesson."

General Practices

- "I engage students in using context clues to guide their reading."
- "I read aloud to students from a variety of sources"

Note: This is paper was based on Stage One of a multi-stage study funded by a Collaborative Center for Literacy Development (CCLD) Participation Grant: September 2002 through August 2004. Stage Two was classroom observation of randomly selected teachers in each school. Stage Three was follow-up interviews with the observed teachers, and Stage Four was a content

analysis of the state-required Comprehensive School Improvement Plan for each of the 38 schools in the study.

Additional Findings

As the final report for this study was being written, the researchers decided to look at the individual "High Scoring" and "Low Scoring" (determined by the 2002 KCCT 10th Grade Reading scores) high school scores on the KCCT 2003 10th Grade Reading test. Table 4 presents a school code, the group category for the school (high/low), and the numerical change from the 2002 to the 2003 score.

Table 4. *Change in KCCT 10th Grade Reading Scores 2002-2003*

School Code	***Category Based on 2002 KCCT 10th Grade Reading Scores***	***Change from 2002 to 2003 KCCT 10th Grade Reading Scores***
9290	High	-5.8305*
9590	High	3.2795
9790	High	-5.1651*
5330	High	12.0759
490	High	10.7705
5130	High	-5.2591*
3640	High	3.4339
3240	High	5.2107
3540	High	10.6661
90	High	13.0938
190	Low	12.2326
9090	Low	7.1087
9490	Low	28.9004
390	Low	7.7358
3440	Low	-3.8882**
5230	Low	9.5153
5030	Low	2.4338
3340	Low	5.8634
9390	Low	19.7156
3040	Low	13.3749

Note: * Schools in the High Scoring Group with a decrease from 2002 to 2003
**Schools in the Low Scoring Group with a decrease from 2002 to 2003

Table 4 is presented in this special section identified as *Additional Findings* as it may help to explain why there were not large differences in the use of research-based strategies reported in the teacher surveys. The underlying assumption for choosing the sample for this study was that High Scoring and Low Scoring schools had "status" differences in the way they taught reading. On the whole, these differences were not apparent in the findings in the study.

Suggestions for Further Research

The school level data for this study should be re-coded and sorted by "change" values rather than by the "status" values of the original analyses. Are differences in the teacher survey data related to the remarkable reading test score gains (and losses) from 2002 to 2003 observed in the data in Table 4?

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