Louisiana teachers' familiarity, usefulness and recommendation of content literacy strategies

Mary E. Howe
Walden University

Marie-Anne Mundy
Texas A&M University at Kingsville

Lori Kupczynski
Texas A&M University at Kingsville

Carrice Cummins
Louisiana Tech University

ABSTRACT

Research-based content reading strategies were infused in Louisiana's curriculum to improve students' comprehension. This change does not guarantee that teachers know what they are, use them, or recommend their use to colleagues. This study surveyed 381 teachers regarding their implementation, familiarity, usefulness and recommendation of the content literacy strategies. Quantitative results indicated significant relationships among the variables of teaching experience, graduate hours, frequency of use, usefulness and familiarity with the strategies. An increase in graduate hours in reading/literacy resulted in an increase of teachers' recommendation and usefulness. Middle and high school levels differentiated on recommendation and usefulness of strategies. Qualitative results suggested that teachers modified strategies based on the integration with another instructional/literacy strategy, purpose of the lesson, and students' literacy needs.

Keywords: content reading strategies; strategy familiarity, usefulness, and recommendation; strategy integration

INTRODUCTION

The Louisiana Department of Education (LDE) (Louisiana Department of Education, 2008) adopted 18 research-based content literacy strategies recommended by Brozo (2008) for use in the state's K-12 classrooms beginning in the 2008-2009 school year. These strategies were infused in the state's comprehensive curriculum, which provided specific English/Language Arts (ELA) units that support the state's ELA standards. Teachers were encouraged to select activities and assessments from the curriculum that best suited their students' needs, while implementing content literacy strategies that provided the best fit. Along with the state's comprehensive curriculum, the Department of Education provided each school district with a document detailing the recommended content literacy strategies along with online resources, such as videos, for some of the suggested strategies (Brozo, 2008). This document contained the rationale for each strategy, its purpose, steps for implementation and original sources. Some descriptions included content-specific samples that could be used for classroom instruction.

In addition to these critical documents, the state also provided professional development for district level personnel on implementation of the strategies. Each district was then responsible for providing teachers with professional development that focused on the content literacy strategies. Teachers were to be instructed not only on the importance of each strategy, but also how to introduce, teach and/or close a lesson that included a content literacy strategy. Additionally, teachers learned what activities and assessments would demonstrate the effectiveness of the selected strategy.

When teachers infuse literacy strategies in their lessons, they share the benefits and purpose of the strategies with students they teach. Research has shown that students who have been equipped with literacy strategies better comprehend complex content specific texts (Neufeld, 2006). Many teachers are aware of content literacy strategies, but do not use them when teaching. On the one hand, teachers, who are familiar with these strategies but do not find them useful, will not utilize them in their classrooms and consequently not recommend them to their colleagues. On the other hand, teachers, who are familiar with these strategies and find content literacy strategies useful, will more likely use and recommend their use to others. The Louisiana Department of Education has included specific content literacy strategies into its comprehensive curriculum (Louisiana Department of Education, 2008); however, this change does not guarantee that teachers know what they are, use them, or recommend their use to colleagues.

A thorough search of numerous databases and the Louisiana Department of Education's website resulted in locating resources and articles that further explained the recommended literacy strategies (i.e., Cummins & Kimbell-Lopez, 2008). The search, however, did not yield any published literature related to the state's K-12 public school teachers' implementation and/or thoughts regarding the research-based content literacy strategies contained in its comprehensive curriculum. This study investigated the degree to which Louisiana teachers are familiar with the research-based content literacy strategies, implement them in their classrooms, find them useful and recommend them to colleagues.

CONCEPTUAL FRAMEWORK

With the passage of the No Child Left Behind (NCLB) Act (2001) and recommendations from the National Reading Panel (2000), emphasis was placed on literacy instruction connected

to successful reading achievement. The five essentials of effective reading instruction (National Reading Panel, 2000) – phonemic awareness, phonics, fluency, vocabulary and comprehension – ensure that teachers are covering all of the components of reading, which can be taught through strategic teaching. Strategic teaching allows numerous skills to be taught at one time in a meaningful context (Kraglar, Walker, & Martin, 2005). More specifically, when literacy instruction implements vocabulary (Santoro, Chard, Howard, & Baker, 2008) and comprehension strategies (Kinniburgh & Shaw, 2009) that reinforce reading skills for students, students can easily identify the strategy that works best for them when reading narrative and expository texts. Neufeld (2006) asserted that learning from expository text is an integral part of learning subject-specific content; therefore, literacy instruction must be seen as a part of the learning process. Two positive outcomes can be realized from effective literacy instruction. Teachers can improve instruction, and students can learn content at a more in-depth level. Furthermore, students are provided with strategies to learn subject-specific content independently and can transfer these strategies to other content areas (Ambe, 2007; Headrick, Harmon, & Wood, 2008; Mason et al, 2006; Misulis, 2009).

Teachers and students become familiar with literacy strategies through purposeful planning, implementation and reflection (Mason et al, 2006). Providing teachers opportunities to discuss, observe and use these strategies will promote proactive decision making in planning lessons and content units and selecting appropriate strategies. During these sessions teachers can identify their students' literacy strengths and weaknesses, examine content goals and objectives, and make appropriate instructional decisions that support learning (Misulis, 2009).

THE PURPOSE OF THE STUDY

This research study examined the degree to which Louisiana teachers were familiar with the strategies, implemented the strategies, found these strategies useful and recommended the strategies to their colleagues. The following research questions guided this study: To what degree are Louisiana teachers familiar with the state's recommended research-based content literacy strategies, and to what degree do they implement, find useful, and recommend these strategies? Is there a relationship among teachers' familiarity, usefulness, recommendation, and frequency of use of these strategies, and their literacy expertise? Does the number of pre-service courses which included literacy strategies, length of teaching experience, socioeconomic status of the school, and the school ranking level (Academic Watch, 1, 2, 3, or 4) make a difference to first year teachers on familiarity, recommendation, usefulness and frequency of use of the literacy strategies? What modifications, if any, were made in the implementation of the literacy strategies?

Setting and Sample

According to the Louisiana Department of Education report (2009) there are 46,197 public school teachers and 1,471 public schools with 796 Elementary (54%), 219 Middle/Jr. High (15%), 301 Senior High (20%) and 155 Combination Schools (11%) in the state of Louisiana. At a 95% confidence level and a conservative response distribution of 50%, a random sample of 381 teachers was needed for this study. Three school districts representing elementary, middle school, and high school populations participated in the survey. See Table 1 for descriptive statistics.

Data Collection

A three-part literacy survey, the Literacy Strategy Survey (see Appendix), was used to measure implementation, familiarity, usefulness and recommendation of the content literacy strategies as well as to collect demographic information. The survey was entered electronically by each participant via SurveyMonkey.com (Lodico, Spaulding, Voegtle, 2010). Using SurveyMonkey.com reduced interruptions to classroom teachers' timetables and allowed participants to respond to the survey at their leisure. Principals of the selected schools were notified that their teachers would be sent email messages requesting their participation. Participants were provided information regarding the project objectives and directions for completing the survey and the necessary URL to connect them to the SurveyMonkey site. The survey included a statement on the first page stating that responding to these questions would equate to their consent, and that the survey would be anonymous. Participants were directed to read each prompt and respond using radio buttons that corresponded with their selections. SurveyMonkey.com collected and computed raw scores for each prompt. Data collection began in the fall of 2010.

Instrumentation

A three-part Literacy Strategy Survey was designed by the researchers to collect teachers' responses regarding their implementation of, familiarity with, usefulness of, and recommendation of the content literacy strategies and demographics. This instrument was modified from a similar questionnaire (Howe, Grierson, & Richmond, 1997) that was used to determine whether 1st -3rd grade teachers were familiar with content area strategies, their frequency of use, and applicability in their respective grades. The survey was reviewed by a panel of reading experts for content validity and changes made upon their recommendations. The Cronbach's Alpha Reliability of the sections of the survey including familiarity of each strategy, usefulness of each strategy, recommendation of each strategy, and frequency of use of each strategy was .976. The Literacy Strategy Survey was designed as an online survey using SurveyMonkey.com (Lodico, Spaulding, Voegtle, 2010).

Part 1 of the Literacy Strategies Survey provided teacher (grade level taught, years teaching experience, & graduate hours in reading/literacy expertise) and school (level of school – elementary, middle or high school, SES, race/ethnicity, & school ranking) demographics data. Part 2 of the survey yielded scores for teachers' familiarity, usefulness and recommendation of the content literacy strategies. Part 3 of the survey determined the teachers' usage of the strategies and whether they modified the strategies in any way during implementation.

RESEARCH METHOD

A quantitative method was chosen as the primary method for this study. A three-part quantitative survey, the Literacy Strategy Survey, served as the only data source with only the final question being discussed qualitatively. The qualitative data were coded and themed according to emerging categories and patterns. The familiarity of Louisiana teachers with the strategies, the degree to which the teachers recommended the strategies, the degree to which the teachers found the strategies useful, and the degree to which the teachers used the strategies were analyzed using descriptive statistics. Each of the averages can range between 1 and 4. A

correlation matrix was used to investigate relationships among the variables of teachers' familiarity, usefulness, recommendation, and frequency of use, and the variables of teaching experience and literacy expertise (graduate hours).

ANOVAs were utilized to examine possible differences (a) among the lengths of teaching experience on teachers' familiarity, recommendation, and frequency of use of the literacy strategies; (b) between the SES of the schools on teachers' familiarity, recommendation, and frequency of use of the literacy strategies; and, the difference (c) among the school ranking levels (Level Academic Watch 1, 2, 3, 4, or 5) on teachers' familiarity, recommendation, and frequency of use of the literacy strategies.

RESULTS

Quantitative Questions

The highest averages above 3.0 included the strategies of (a) brainstorming, graphic organizers and vocabulary cards in familiarity with the strategy; (b) brainstorming, directed reading thinking activity, graphic organizers and vocabulary cards in recommendation of the strategy; and (c) brainstorming, directed reading thinking activity, graphic organizers and vocabulary cards in usefulness of the strategy. However, with a mean of 2.98, the teachers on the average used the brainstorming and graphic organizer strategies no more than weekly. Table 2 provides averages for each strategy in each reported area: familiarity with the strategies, degree to which the teachers recommended the strategies, degree to which the teachers found the strategies useful, and the frequency of which the teachers implemented the strategies.

H_{01}: There is no significant relationship among the variables of teachers' familiarity, usefulness, recommendation, and frequency of use and the variables of teaching experience and literacy expertise (graduate hours). The data were analyzed utilizing a correlation matrix as shown in Table 3.

Significant relationships were found between teaching experience and both frequency of use (r = .196, p<.01) and familiarity with the strategy (r = .135, p< .05). No significant correlation was found between teaching experience and either usefulness or recommending strategies. Significant relationships were found between graduate hours and frequency of use (r = .241, p<.01), usefulness of the strategy (r = .224, p<.01) and familiarity with the strategies (r = .228, p<.01). No significant correlation was found between graduate hours and recommending strategies.

H_{02}: There is no significant difference among the number of pre-service courses which included literacy strategies on first year teachers' familiarity, recommendation, and frequency of use of the literacy strategies.

This hypothesis could not be computed as there were only three first year teachers in the 300 respondents.

H_{03}: There is no significant difference among the lengths of teaching experience on teachers' familiarity, recommendation, and frequency of use of the literacy strategies.

The data were analyzed utilizing MANOVA. The Wilks' Lambda of .96 was not significant, $F(12, 519) = .85$, $p = .57$, partial eta squared = .01, indicating that we can accept the null hypothesis..

H_{04}: There is no significant difference between the SES of the school on teachers' familiarity, recommendation, and frequency of use of the literacy strategies.

The data were analyzed utilizing MANOVA. The Wilks' Lambda of .98 was not significant, $F(12, 519) = .40$, $p = .94$, partial eta squared = .01, indicating that we can accept the null hypothesis.

H_{05}: There is no significant difference among the school ranking levels (Level Academic Watch 1, 2, 3, 4, or 5) on teachers/ familiarity, recommendation, and frequency of use of the literacy strategies.

The data were analyzed utilizing MANOVA. The Wilks' Lambda of .42 was not significant, $F(12, 516) = 1.45$, $p = .14$, partial eta squared = .03, indicating that we can accept the null hypothesis.

H_{06}: There is no significant difference among the levels 1 to 4 with 1 being the least and 4 the most number of graduate hours in reading/literacy on teachers' familiarity, recommendation, usefulness, and frequency of use of the literacy strategies.

The data were analyzed utilizing MANOVA. Wilk's Lambda of .78 was significant, $F(12, 468) = 2.45$, $p = .005$, partial eta squared = .08, indicating that there are significant differences present among the levels of graduate hours. ANOVA on the dependent variables were conducted as follow-up tests to the MANOVA. The ANOVA on the Familiarity with Strategies with a moderate effect size and on the Frequency of Use of Strategies with a medium to large effect size were significant while the Recommendation of Strategies and the Usefulness of Strategies were not significant. See Table 4. The Levene Test of Homogeneity of Variances showed equal variances present in all areas and LSD was utilized for the post hoc tests. See Table 5.

Significant differences were found on familiarity between level 1 of graduate hours in reading/literacy (M = 44.62, SD = 13.10) and level 2 (M = 51.83, SD = 13.29) , $p = .03$; and between level 1 of graduate hours in reading/literacy (M = 44.62, SD = 13.10) and level 4 (M = 53.69, SD = 12.71) , $p = .01$. Significant differences were found on frequency of use between level 1(M = 30.98, SD = 9.50) and level 2 (M = 36.87, SD = 10.90), $p = .02$; and between level 1 (M = 30.98, SD = 9.50) and level 4 (M = 40.50, SD = 11.85), $p = .00$.

H_{07}: There is no significant difference among the school levels (elementary, middle and high school) on teachers' familiarity, recommendation, frequency of use, and usefulness of strategies.

The data were analyzed utilizing MANOVA. Wilk's Lambda of .92 was significant, $F(8, 756) = 1.95$, $p = .05$, partial eta squared = .04 which is considered a small effect size, indicating that there are significant differences present. ANOVA on the dependent variables were conducted as follow-up tests to the MANOVA. The ANOVA on the Familiarity with Strategies with a small effect size, on the Recommendation of Strategies with a medium effect size and on the Usefulness of Strategies with a medium effect size were significant while the Frequency of Use of Strategies not significant. See Table 6. The Levene Test of Homogeneity of Variances showed equal variances present in the areas of Recommendation of Strategies and Usefulness of Strategies. Familiarity with Strategies did not have equal variances across groups but due to the robustness of ANOVA, LSD was utilized for the post hoc tests. This is noted in Table 7. A significant difference was found on familiarity between Middle School (M = 43.59, SD = 12.25) and High School (M = 49.99, SD = 15.04), $p = .02$. Significant differences were found on recommendation of strategies between Elementary School (M = 41.95, SD = 15.64) and Middle School (M = 35.22, SD = 17.22), $p = .05$; and between Middle School (M = 35.22, SD = 17.22) and High School (M = 46.40, SD = 16.90), $p = .00$. Significant differences were found on usefulness of strategies between Elementary School (M = 42.10, SD = 15.55) and High School

(M = 47.03, SD = 16.53), p = .05; and between Middle School (M = 36.41, SD = 15.98) and High School (M = 47.03, SD = 16.53), p = .00.

Qualitative Question

The survey contained one open-ended question that required qualitative analysis. This question provided data related to the literacy strategies that teachers modified as well as how they modified them. Only 14 of the 275 respondents indicated that they modified the strategies when they used them. The responses to the open-ended question were categorized in three areas of application: *integrated with another instructional/literacy strategy, purpose of the lesson*, and *students' literacy needs*. Out of the 18 strategies, only one strategy (GISTing) was never modified. Additionally, not all strategies were modified to the same extent. Three strategies Professor Know-It-All, SPAWN Writing and SQPL, only had one modification each, while Vocabulary Cards was modified in 14 different ways. In one instance, the same modification was duplicated across the 18 strategies. This participant modified vocabulary, used drawings and acting out for 11 of the 18 strategies.

Strategies modified based on integration with other strategies.

Teachers indicated in their responses that they integrated strategies among the 18 target strategies to improve literacy instruction. Many teachers used graphic organizers, such as, "thinking maps," "circle maps," "concept maps," or "story graphs" to visually organize students' responses when brainstorming ideas during whole class instruction. The notion of integrating graphic organizers in reading instruction is supported by numerous researchers (Furtado & Johnson, 2010; Jiang & Grabe, 2007; Lutz, Guthrie, & Davis, 2006). Furtado and Johnson (2010) recommended using graphic organizers with primary-age children when they read narrative and expository texts. Lutz, Guthrie, and Davis (2006) believed that student engagement in learning increases with the use of graphic organizers in elementary school classrooms. Jiang and Grabe (2007) focused on integrating graphic organizers that matched the organization of texts for second-language learners in elementary, middle and high school. In each example of graphic organizer integration, comprehension was enhanced and students applied their use independently.

Strategies modified based on purpose of the lesson.

Teachers modified six of the 18 strategies based on the purpose of the lessons taught. Each respondent modified strategies in pre-reading/writing activities, a post-writing activity, or test preparation. Table 8 identifies the strategy that was modified for this category.

Establishing the purpose of a reading lesson prior to implementing reading strategies is essential for narrative and expository text comprehension (Lutz et al, 2006). Not all strategies are appropriate for a specific type of text or reading/content area lesson (Walton, 2006); therefore, careful consideration of the lesson's intent may direct the teacher to focus on student learning outcomes and the best strategy to use to meet those outcomes. Lutz et al (2006) asserted that high text comprehension is possible when the purpose of the lesson is matched by carefully selected strategies. These researchers suggested that comprehension increases when students are engaged in learning, especially in complex reading tasks (Lutz et al, 2006, Walton, 2006).

Strategies modified based on student needs.

Teachers modified strategies based on student performance and/or a student's disability. Lessons were modified for readers performing below grade level and students with disabilities required lesson modifications related to their learning style, reading development, or accommodation/modification. The following table lists the strategy and teachers' modifications for this category:

In any classroom, a teacher will encounter students of varying abilities and expertise in English. Walton (2006) suggested that below-grade level readers best learn to read when they are introduced to one strategy that is repeated until it is mastered. When mastery is not achieved, the strategy may need to be modified so students can comprehend text.

Little (2000) modified the reciprocal teaching strategy for below-sixth-grade readers by adjusting two steps in the strategy. This adjustment allowed these students to comprehend content area texts at a higher level of comprehension. In fact Little suggested that further modifications to that strategy could result in better comprehension if the modifications reflected the students' differing learning styles.

DISCUSSION

The quantitative results of this study indicated a significant relationship between (a) teacher experience in years and familiarity with and frequency of use of the strategies; and (b) graduate hours and familiarity with, usefulness of and frequency of use of the strategies. No significant differences were found among the lengths of teaching experience or socioeconomic status levels, or school ranking levels on teachers' familiarity, recommendation, and frequency of use of the literacy strategies. The following significant differences were found between levels of graduate hours in reading literacy: a) on familiarity between level 1 (M = 44.62, SD = 13.10) and level 2 (M = 51.83, SD = 13.29) , p = .03; and between level 1 (M = 44.62, SD = 13.10) and level 4 (M = 53.69, SD = 12.71) , p = .01; b) on frequency of use between level 1(M = 30.98, SD = 9.50) and level 2 (M = 36.87, SD = 10.90), p = .02; and between level 1 (M = 30.98, SD = 9.50) and level 4 (M = 40.50, SD = 11.85), p = .00. The following significant differences were found between school levels (a) on familiarity between Middle School (M = 43.59, SD = 12.25) and High School (M = 49.99, SD = 15.04) , p = .02; b) on recommendation of strategies between Elementary School (M = 41.95, SD = 15.64) and Middle School (M = 35.22, SD = 17.22), p = .05; and between Middle School (M = 35.22, SD = 17.22) and High School (M = 46.40, SD = 16.90), p = .00; c) on usefulness of strategies between Elementary School (M = 42.10, SD = 15.55) and High School (M = 47.03, SD = 16.53), p = .05; and between Middle School (M = 36.41, SD = 15.98) and High School (M = 47.03, SD = 16.53), p = .00.

The qualitative results of this study indicated that some teachers modified the target strategies. All but one of the strategies were modified; moreover, the strategies were not modified to the same extent. One modification was duplicated across the strategies. Strategies were modified when teachers (a) integrated a strategy with another instructional/literacy strategy, (b) integrated writing in the lesson, and (c) planned instruction that included the need of the students.

RECOMMENDATIONS

Based on the quantitative results of this study, we recommend that (a) school districts support teachers' literacy graduate course work by awarding graduate scholarships or providing some funding towards graduate fees. Graduate hours appeared to make a difference on familiarity with and frequency of use of the strategies. These results suggest that teachers who complete literacy graduate courses implement the strategies learned in their classrooms. Moreover, it is recommended that teachers with more experience be used as mentors for the less experienced teachers, since teachers' experience related positively to familiarity with and frequency of use of the strategies. It is also recommended that middle school administrators address the lack of importance placed on usefulness of strategies and recommendation of strategies at the middle school level.

Unless teachers support their familiarity, usefulness and recommendation of these research-based literacy strategies, they could have the tendency to ignore the benefits of strategic teaching and teach what has worked for them in the past. The more familiar teachers are with these strategies, the more they will implement and view them as useful, and, in turn, recommend their use.

FUTURE STUDIES

Further follow-up studies need to focus on strategy selection and/or strategy modifications for specific content rather than looking at the strategies in a generalized way. Further studies focusing on strategy selection and/or strategy modifications and student groups, such as students with and without disabilities, English as second language learners and specific learning styles might reveal further teaching recommendations for teachers. A study should focus on first-year teachers to the profession to determine what reading strategies they learned in their undergraduate coursework and which strategies they are able to teach. There is a possibility that teachers, regardless of their teaching experiences, use some of the 18 strategies but were unaware of their names because the strategy's name may have been altered from the one they currently know. Thus, a qualitative study on the strategies teachers use in the classroom needs to be undertaken.

REFERENCES

Ambe, E. B. (2007). Inviting reluctant adolescent readers into the literacy club: Some comprehension strategies to tutor individuals or small groups of reluctant readers. *Journal of Adolescent and Adult Literacy, 50*(8), 832-839.

Brozo, W. G. (2008). Content literacy strategy descriptions for the 2008 Louisiana comprehensive curriculum. Retrieved from http://www.doe.state.la.us.

Cummins, C. & Kimbell-Lopez, K. (2010). READ: Seventy strategies to support reading success. Hoboken, NJ: Wiley & Sons.

Furtado, L, & Johnson, L. (2010). Enhancing summarization skills using twin tests: Instruction in narrative and expository text structures. *Reading Matrix: An International Online Journal, 10*(20), 217-281.

Headrick, W. B., Harmon, J. M., & Wood, K. (2008). Prominent content vocabulary strategies and what secondary preservice teachers think about them. *Reading Psychology, 29*, 443-470.

Howe, M. E., Grierson, S. T., & Richmond, M. (1997). A comparison of teachers' knowledge and use of content reading strategies in the primary grades. *Reading Research and Instruction, 36*(4), 305-325.

Jiang, X., & Grabe, W. (2007). Graphic organizers in reading instruction: Research findings and issues. *Reading in a Foreign Language, 19*(1), 34-55.

Kinniburgh, L. H., & Shaw, E. L. (2009). Using Question-Answer Relationships to build: Reading comprehension in science. *Science Activities, 45*(4), 19-28.

Kraglar, S., Walker, C. A., & Martin, L. E. (2005). Strategy instruction in primary content textbooks. *The Reading Teacher, 59*(3), 254-260.

Little, Q. (2000). Teaching learners – learners teaching: Using reciprocal teaching to improve comprehension strategies in challenged readers. *Reading Improvement, 37*(4), 190-194.

Lodico, M. G., Spaulding, D. T. & Voegtle, K. H. (2010). Methods in educational research: From theory to practice. Hoboken, NJ: Wiley & Sons.

Louisiana Department of Education. (2008). Comprehensive Curriculum. Retrieved from http://www.doe.state.la.us/topics/comprehensive_curriculum.html

Louisiana Department of Education. (2009). Student Data for Grades K-12. Retrieved from http://www.doe.state.la.us/offices/infomanagement/student_enrollment_data.html

Lutz, S., Guthrie, J., & Davis, M. (2006). Scaffolding for engagement in elementary school reading instruction. *The Journal of Educational Research, 100*(1), 3-20.

Mason, L. H., Meadan, H., Hedin, L., & Corso, L. (2006). Self-regulated strategy development instruction for expository text comprehension. *Teaching Exceptional Children, 38*(4), 47–52.

Misulis, K. E. (2009). Promoting learning through content literacy instruction. *American Secondary Education, 37*(3), 10-19.

National Institute of Child Health and Human Development. (2000). *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (NIH Publication No. 00-4769). Washington, DC: U.S. Government Printing Office.

Neufeld, P. (2006). Comprehension instruction in content area classes. *The Reading Teacher, 59*(4), 302-312.

Santoro, L. E., Chard, D. J., Howard, L., & Baker, S. K. (2008). Making the very most of classroom read-alouds to promote comprehension and vocabulary. *Reading Teacher, 61*(5), 396-408.

U.S. Congress. Senate. (2001). *The No Child Left Behind Act of 2001*. 107th Cong., 1st sess. P. L. 107-110.

Walton, S. (2006). Three steps for better reading in science: Before, during, and after. *Science Scope, 30*(4), 32-37.