

Promoting Success in High School World History: Peer Tutoring Versus Guided Notes

Margo A. Mastropieri, Thomas E. Scruggs, Vicky Spencer, and Judith Fontana
George Mason University

Abstract. *The purpose of this investigation was to compare qualitative and quantitative outcomes associated with peer tutoring versus teacher-directed guided notes in world history for secondary-level students with mild disabilities. Sixteen students with mild disabilities (15 of whom had learning disabilities) participated in a nine-week quarter of one of the two instructional conditions. The same special education teachers taught students during world history classes. Measures included pre- and posttests of reading fluency, comprehension strategies, and content tests, including end-of-chapter tests, cumulative-delayed-recall tests, and a delayed-recall end-of-year final exam covering the entire academic year. In addition, qualitative procedures were employed, including interviews of teachers and students regarding their instructional preferences. Findings indicated that students who participated in peer tutoring significantly outperformed those who participated in the guided-notes condition on content-area tests. No significant differences were obtained on oral-reading-fluency measures, but students in the tutoring condition performed significantly better at using a reading comprehension summarization strategy independently, and at remembering the strategy steps. Results of student interviews suggested that students responded positively overall to tutoring and guided notes, and provided specific relevant insights on each procedure. Students in the tutoring condition indicated that the time spent tutoring felt like one of the shortest academic quarters for them. Findings are discussed with respect to both benefits and challenges associated with implementing peer tutoring in high school special education content-area classes.*

Secondary content areas, including science and social studies, are especially challenging for students with learning disabilities (e.g., Scruggs & Mastropieri, in press). Teacher lectures and textbooks are usually the dominant medium for instruction, and the pace of content coverage is rapid, with breadth, rather than depth, of content emphasized. Reading levels of content-area textbooks usually far exceed the reading levels of students with learning disabilities. Moreover, teachers are pressured to cover content that will appear on end-of-year high-stakes tests, rather than to ensure that students have mastered critical concepts and content (Fraser-Blunt, 2000).

Teachers of secondary content classes often assume that all students have prerequisite study and organizational skills sufficient to be independent learners. For example, expectations are made for students to read the textbook independently, organize content, take good notes during class lectures, complete long-term assignments, participate actively in class, and study relevant facts, concepts, and details for tests (Scruggs & Mastropieri, in press). Students with disabilities may be overwhelmed with the demands of such learning environments (Mastropieri & Scruggs, 2000a). Fortunately, some research has documented ways for facilitating instruction in secondary content areas that improves performance of students with disabilities. For example, secondary content-area research has addressed: (1) learning strategies (e.g., Deshler, Ellis, & Lenz, 1996); (2) note-taking skills (e.g., Horton, Lovitt, & Christensen, 1991; Suritsky & Hughes, 1996); (3) semantic feature analysis for learning vocabulary (Bos & Anders, 1990); (4) graphic organizers (Boyle & Weishaar, 1997); (5) content enhancements (Bulgren, Deshler, & Schumaker, 1997); and (6) guided notes or study guides (e.g., Bergerud, Lovitt, & Horton, 1988). Most of these procedures have resulted in positive gains for students with disabilities under carefully controlled interventions (Mastropieri & Scruggs, 2002).

Peer-tutoring and peer-mediation programs have also been employed to improve academic skills of students for many years (see Maheady, Harper, & Malette, 2001; Topping & Ehly, 1998; Utley, Mortweet, & Greenwood,

Requests for reprints should be sent to Margo A. Mastropieri, George Mason University, Graduate School of Education, MSN 4B3, Fairfax, VA 22030-4444. Electronic inquiries may be sent to mmastrop@gmu.edu.

1997 for reviews). Peer tutoring serves to increase academic engagement and ownership of learning among students. Within different tutoring configurations, classwide peer tutoring has been employed to enhance academic skills in inclusive classroom settings, particularly for low-achieving students (e.g., D. Fuchs, L. S. Fuchs, Mathes, & Simmons, 1997; L. S. Fuchs, D. Fuchs, Phillips, Hamlett, & Karns, 1995; Greenwood, Carta, Kamps, & Hall, 1988). Previous peer-tutoring research targeted specifically basic skills such as phonics and word reading (e.g., Scruggs & Osguthorpe, 1986). More recently, peer mediation has addressed reading-comprehension strategies in inclusive classes of diverse academic abilities in elementary grade reading classes (e.g., Mathes, Howard, Allen, & D. Fuchs, 1998).

Less frequently, peer tutoring has been conducted at the secondary level (Maheady, Harper, & Sacca, 1988; Maheady, Sacca, & Harper, 1988). For example, in several investigations, Maheady and colleagues modeled classwide peer tutoring after procedures developed by Greenwood (1999) and implemented them in secondary classes for students with disabilities. In these studies, students tutored one another on important facts from secondary content-area classes. Findings were promising, indicating that when students with disabilities participated in classwide peer tutoring, their content-area test scores improved, for example over 20 percentage points on weekly tests in the Maheady, Sacca, and Harper (1988) investigation. More recently, L. S. Fuchs, D. Fuchs, and Kazdin (1999) implemented PALS (Peer-Assisted Learning Strategies) for reading in a 16-week intervention in high school classes with students with learning disabilities, mild mental retardation, other disabilities, and remedial students. PALS students received peer tutoring and strategy instruction five times every two weeks, while contrast teachers provided conventional reading instruction without peer-tutoring activities. L. S. Fuchs, D. Fuchs, and Kazdin measured reading fluency and comprehension but obtained equivocal findings, in that although PALS students improved on comprehension relative to non-PALS students, no differences were obtained on reading-fluency measures. PALS students agreed more strongly that they had worked hard and enjoyed working with peers.

Bryant et al. (2000) implemented a four-month multicomponent reading intervention involving 60 sixth-grade students (including average achievers, low achievers, and students with reading disabilities) and 10 teachers. Students were provided with a strategy to promote word identification, partner reading to promote fluency, and strategies to promote comprehension (Klingner, Vaughn, & Schumm, 1998) conducted in cooperative learning groups. Small but statistically reliable pre-post differences were observed in word identification and fluency, but not in reading comprehension. A significant achievement level by group interaction was reported on word identification, with differential gains observed among students with reading disabilities; however, this may have been an artifact of ceiling effects (i.e., near 100 percent performance on both pre-

and posttests and, consequently, constrained variability) on the part of the average and low achievers. Although the combination of strategy instruction and peer mediation is of interest, the lack of a comparison condition in this investigation limits understanding of the relative efficacy of this intervention.

Mastropieri, Spencer, Scruggs, and Talbott (2000) summarized 35 studies in which students with disabilities had been employed as tutors, and they reported mean effect sizes (Glass, McGaw, & Smith, 1987) of 0.36 for tutors, 0.55 for tutees, and 0.63 for tutoring with role reciprocity, indicating moderate to large benefits from tutoring programs. Results of research to date appear promising with respect to increased academic time on task, academic growth, and positive reports about tutoring from students and teachers. However, little is known with respect to the use of peer-mediation strategies to teach comprehension strategies for reading within content-area instruction at the high school level (Mastropieri & Scruggs, 2000b).

The present investigation examined a peer-tutoring program in world history classes conducted within a high school special education setting in which all students had been identified as having learning disabilities, emotional disabilities, or mild mental retardation. We integrated reading-comprehension strategy instruction within world history classes using a peer-tutoring model for practicing the comprehension strategy instruction using the world history textbook. We compared this approach with a teacher-directed guided-notes condition (e.g., Lazarus, 1993) because it is a popular instructional strategy for secondary content-area learning (Heward, 2002; Suritsky & Hughes, 1996) and because it was a strategy of choice in the school, and district, in which this study was conducted. We were interested in learning whether previously conducted models of peer mediation would be easily adaptable when using secondary world history textbooks. We were also interested to determine whether such procedures could be used to teach reading-comprehension strategies, and whether the additional practice on repeated oral readings and strategy questioning during tutoring would yield gains on reading-fluency and comprehension measures. Our research question was, "Will a combined peer-tutoring/strategy instruction intervention result in increased academic achievement relative to a guided-notes intervention?" In addition, qualitative and quantitative methods were employed to address the question, "What are teacher and student perceptions of classwide peer tutoring in world history?"

METHOD

Participants

Students

Students were from a high school located in a major metropolitan area in the mid-Atlantic region of

the country. The high school housed approximately 1,800 students in grades 9 through 12; approximately 125 were students with disabilities. Students represented the range of socioeconomic status and ethnicity and included approximately 62 percent Caucasian, 20.5 percent Asian/Pacific Islander, 12 percent Hispanic, 8.5 percent African American, 1 percent multiracial, and <1 percent of American Indian racial and ethnic backgrounds. Sixteen high school students with mild disabilities participated in the nine-week investigation. All students met federal and state criteria for the respective disability classification and included 14 students with learning disabilities, one student with learning disabilities and emotional disabilities, and one student with mild mental retardation. Eighty-one percent of the participants were males, and included six Caucasian, four Hispanic-American, four African-American students, and two Asian-American students. All students were enrolled in the 10th grade except one student who was a senior and was repeating the class to meet graduation requirements. The two classes consisted of seven and nine students, respectively. None of these categories varied by instructional condition according to chi-square analysis (all $ps > 0.05$). Students' average age was 15 years 8 months ($SD = 9$ months), and did not differ according to a t -test, $p > 0.05$.

Students spent an average of 80 percent of their school day in classes taught by special education teachers and the remainder of the time in the regular classroom. Different special education teachers taught subjects such as English, algebra, world history, science, and basic-skills classes. Some students also participated in co-taught inclusive classes in which special and general educators team-taught subjects such as algebra, chemistry, and English. General education classes that these students were enrolled in included health and physical education, weight training and conditioning, driver education, auto technology, chorus, Spanish, and French. All decisions as to whether students participated in classes taught by special educators, or team-taught by general and special educators, were made by the IEP team, based on individual student needs.

The IQ scores on the Wechsler Intelligence Scale for Children-III (Psychological Corporation, 1991) of this sample ranged from 61–105. Reading achievement standard scores ranged from 63–100 on the Woodcock-Johnson. Data for the two conditions are presented separately in Table 1. None of these differences were statistically significant between treatment conditions (all $ps > 0.05$ according to t -tests for independent means). As can be seen in Table 1, the Woodcock-Johnson scores were very similar. Performance and full-scale IQ were different by condition; however, these scores favored the comparison guided-notes condition, and as such provided a more rigorous test of the peer-tutoring condition.

Attendance

School attendance was taken daily and number of absences was totaled across students and compared via a

TABLE 1
Participant Demographic Data

Measure	Treatment Condition	
	Tutoring Mean (SD)	Guided-Notes Mean (SD)
Verbal IQ	83.3 (8.7)	82.8 (11.9)
Performance IQ	84.3 (14.2)	96.7 (22.8)
Full-scale IQ	81.9 (10.4)	88.5 (15.2)
Woodcock Johnson		
Broad reading	81.8 (9.8)	81.7 (10.5)
Basic reading	83.8 (7.6)	82.8 (9.0)
Reading comp.	84.9 (10.4)	84.0 (10.5)
Broad math	85.1 (12.0)	85.8 (15.8)
Basic math	80.6 (10.0)	80.7 (13.4)
Math reasoning	90.3 (11.7)	90.2 (7.0)
Broad written lang.	74.9 (9.4)	73.0 (6.1)
Basic writing	73.6 (8.7)	71.3 (9.3)
Written expression	84.3 (9.0)	80.5 (6.8)

t -test. Students in the tutoring condition were absent an average of 2.33 ($SD = 1.73$) days and students in the guided-notes condition were absent an average of 2.57 ($SD = 1.51$) days. These differences were not significant, $t(14) = 0.29$, $p = 0.78$.

Teachers

One regularly assigned special education teacher who held a master's degree in special education and a teaching license in learning disabilities served as the teacher in both classes. This teacher was a Caucasian male who was in his first year of teaching special education at that high school. One additional assistant who was an experienced licensed special education teacher served as an assistant co-teacher in both classes. Project staff were also present to videotape and observe during all sessions in both conditions.

Materials

Both Conditions

Materials for both conditions were based on the regularly adopted textbook by the school district and the standards of learning for the state (Commonwealth of Virginia Department of Education, 1999). Both conditions used the same textbook and accompanying materials. The textbook, *Exploring the World* (Holt & O'Connor, 1994), was adopted by the school district for students with disabilities enrolled in 10th-grade world history, and was written on approximately an 11th-grade readability level, according to Fry's (1977) formula. The unit on the World Wars was taught in the classes during the study. Teacher materials for both conditions included lesson plans using the teacher effectiveness model of daily review, teacher presentation, guided and independent practice, the use of overhead transparencies, and the overhead projector.

Materials for both conditions also included individual student folders that contained the name of the local university and each student's name. Materials inside the folders included point sheets, pencils, and condition-specific materials. The point sheet was an 8 1/2 by 11-inch sheet with a grid similar to graph paper. Condition-specific materials are now described.

Guided-Notes Condition Materials

Materials in the guided-notes condition included teacher materials and student materials (as described by, e.g., Hamilton, Seibert, Gardner, & Talbert-Johnson, 2000; Heward, 1994; Lazarus, 1993). Teacher materials included lesson plans, teacher-made guided notes, accompanying textbook materials, and procedures for implementing the point sheets. The guided notes contained the title of the chapter and relevant text sections, fill-in-the-blank items interspersed throughout a set of notes, and materials taken directly from the students' textbook, similar to a cloze passage. A typical set of guided notes was two to three pages in length, covering text content from several corresponding text pages. Worksheets that accompanied each chapter included fill-in-the-blank items, matching items, vocabulary, short-answer items, and suggested multimedia, including relevant videos. The lesson plans also included using a general model of teacher effectiveness, in that each day contained daily review, statement of purpose, teacher presentation of information (including questioning and feedback), guided practice, and independent practice (Mastropieri & Scruggs, 2002). Materials also included comprehension-questioning activities such as activating prior knowledge, asking students to relate the material to previously read content, and summarizing relevant concepts. Student materials included separate file folders containing students' names, pencils, copies of the point sheets, guided notes, and other relevant class activity and worksheets.

Tutoring Condition Materials

Tutoring materials were developed based on previous research-based strategy instruction with special populations. Materials previously employed by Mastropieri et al. (2001) were modified and adapted to meet the needs of secondary students with reading comprehension difficulties in content-area classes. Materials for teachers included lesson plans for introducing tutoring, including the general rules and procedures, those for identifying and correcting oral reading errors, for using the summarization strategy and the summarization sheets, for using self-monitoring checklists to assess student behavior, for using the review sheets, and for implementing the point sheets. In addition, lesson plans incorporated the general model of teacher effectiveness, including daily review, statement of purpose, teacher

presentation of information (including questioning and feedback), guided practice, and independent practice.

Four large laminated charts containing the rules and strategy procedures were displayed in the room along one wall during the tutoring class period. These charts were removed after the tutoring condition world history class because the room was shared with other subject area teachers and the guided-notes condition world history class.

Student materials consisted of separate file folders containing small laminated cards that displayed the same information as the wall charts (cue cards of the tutoring rules, correction procedures, and steps for executing the paragraph summarization strategy), summarization sheets, summary sheets, and point sheets. Summary sheets contained major questions and answers from the text; summarization sheets were used for recording responses to summarization strategy questions.

Procedure

Both Conditions

Once district, student, and parent permission were obtained, classes were assigned to one of the two instructional conditions. The assignment was nonsystematic. However, since student achievement was very similar in the two conditions, and performance and full-scale IQ scores were higher in the guided-notes condition, the assignment represented a more rigorous test for the tutoring condition. The intervention was conducted over a period of nine weeks, which was the length of one marking period, and included pretesting, training, and unit posttesting. The cumulative final exam was administered approximately one week after completion of the unit. Since the high school used block scheduling, classes met for approximately 90 minutes on a rotating block schedule. This meant classes met every other day throughout the study, with classes meeting twice weekly during some weeks and three times weekly during subsequent weeks, for a total of approximately 18 class sessions devoted to instruction, the same for both conditions. The same special education teachers (one regularly assigned and one assigned to assist for the project) taught students in both conditions. These teachers applied a general model of teacher effectiveness using daily review, presentation of information, and guided and independent practice throughout the implementation period.

Students in both conditions were pretested on their reading fluency and comprehension strategies and their world history content-area knowledge on the upcoming unit prior to project implementation. Students in both conditions were informed they were participating in a project designed to provide information on how teachers could be better prepared to teach students world history.

Students were informed that points would be awarded periodically throughout lessons if students arrived to

class on time, came prepared, and were on task during class. Teachers in both conditions distributed points to students at the beginning and the end of the class period as well as at irregular intervals throughout the class. For example, after the initial bell rang beginning the class, the teacher would say, "All students who have class materials out and ready get 10 points." At the end of the period, the teacher would summarize by restating who had been on task and completed the relevant materials that day and again awarded points. Throughout the period, the teacher assigned points to students who were working hard to complete the relevant activities. All sessions were observed by project staff who recorded notes, completed fidelity of treatment implementation checklists, and videotaped classes.

Condition-specific instruction took place during every class session. Chapter tests were administered at the completion of each chapter and were immediately followed by the introduction of the next chapter. (In the middle of the project there was a one-week delay while students took statewide competency tests.) At the end of the third chapter test, a day of review was held, followed by the administration of the cumulative production (open-ended item) test and then the cumulative multiple-choice test. The next few days consisted of an entire year review followed by the administration of the end-of-school-year final exam.

Guided-Notes Condition

During this condition, the teacher directed all aspects of instruction. Lessons began with a daily review, teacher presentation of new information, guided, and independent practice. Following the teacher presentation, students participated in oral reading one at a time as the class read each chapter or sections of the chapter. The teacher used questioning strategies to activate prior knowledge, recall, and comprehension of read information. After reading the text, guided-study notes were distributed that matched the day's readings. Students completed the guided notes independently while the teachers circulated around the room and assisted students individually as necessary. Immediately following this, the teacher reviewed the guided notes with the entire class using the overhead projector. Students actively participated by volunteering to write answers on the guided notes projected on the overhead during the whole-class review. During this activity, students were encouraged to correct their own guided notes whenever necessary. Other relevant worksheet activities, accompanying videos, and student projects on the chapters were also completed during this condition.

Tutoring Condition

During this condition, the teacher reviewed and presented information as in the study-guide condition.

However, during the time that the guided-notes activity was undertaken in the other condition, students in this condition participated in peer tutoring. Students were assigned to tutoring dyads by the teacher, with researcher input, by matching higher and lower performing readers into dyads. Some dyads were altered based on teacher knowledge of which students would be more likely to work well together. Students within dyads were assigned names such that higher-performing readers were called admirals and the lower-performing readers were called generals (although students were unaware of the higher- and lower-performing reading status). This was done so that the admirals or higher-performing readers would always read first, followed by the generals or lower-performing readers.

During the first day of tutoring, all roles, rules, and materials were introduced to the class as a whole, and students received their folders containing the small cue cards with relevant instructions. Students practiced reading and correcting errors while tutoring, and then were introduced to the summarization strategy procedures.

At the beginning of tutoring, admirals read one paragraph while generals listened and then students reversed roles, reading the same paragraph a second time. Immediately following oral reading, students implemented the summarization strategies to promote reading comprehension. For the summarization strategies, after reading each paragraph, students asked each other:

- "What is the most important what or who in the text?" followed by
- "What is the most important thing about the what or who in the text?" and
- "What is the summary sentence?"

Students worked with their partners to develop responses to the questions, but each student wrote answers to the questions on his or her own accompanying worksheet. This process was repeated paragraph by paragraph. After completing tutoring, the teacher then proceeded to use a whole-class review session during which a blank summarization sheet was placed on the overhead projector and students were asked to supply their responses to the questions. Differing responses were discussed and students were encouraged to alter their own responses to reflect information based on the class discussion.

Initially, students experienced great difficulty answering the comprehension questions. During this period, teachers circulated around the room and assisted dyads and tried to coach them to generate correct summary sentences. After several weeks, students appeared to master the summarization strategy and were then told they could read three paragraphs at a time and then ask and answer the comprehension questions on those three paragraphs. Since dyads worked at differing paces, some dyads completed reading before others. During this time, students were told to continue tutoring each

other, but now to ask each other questions from the chapter using a summary sheet containing major questions and answers from the text.

Measures

Both Conditions

Both conditions received the same dependent measures, some of which were quantitative in nature and others qualitative. Quantitative data sources included content tests, reading fluency, and comprehension strategy tests. World history content tests included pre- and posttests of world history content, including end of chapter tests for three chapters, cumulative tests, and a delayed final exam covering the entire year's content as well as items from the chapters in the study. Tests were constructed to match the typical type of exam provided by teachers at that school and to provide teachers with information about content covered for the high-stakes state-level testing. The pretest consisted of 35 open-ended items from a sample of all chapters in the study. It was decided to use open-ended items for the pretest to minimize effects from guessing, which might be expected on multiple-choice items where little information is known. Open-ended tests contained items such as the following:

- (a) What is self-determination?
- (b) What is the League of Nations?
- (c) What was the Treaty of Versailles?
- (d) Who was Winston Churchill?

Multiple-choice tests contained items such as the following:

- (1) The freedom that allowed people to choose their form of government is known as:
 - (a) Disarmament
 - (b) Self-government
 - (c) Fascism
 - (d) Self-determination
- (2) Which of the following is an alliance of nations for a common purpose of promoting peace?
 - (a) Treaty of Versailles
 - (b) World Peace Treaty of 1929
 - (c) League of Nations
 - (d) New Economic Party
- (3) The term "disarmament" means:
 - (a) An increase in the nation's military strength and equipment
 - (b) A decrease in the nation's military strength and equipment

- (c) A rise in the prices and salaries that lessens purchasing power of money
- (d) Money billed to a nation to pay for war

The Chapter 1 test contained 13 multiple-choice and 7 open-ended items; the Chapter 2 test contained 12 multiple-choice and 7 open-ended items; the Chapter 3 test contained 10 multiple-choice and 6 open-ended items. These tests were created using multiple formats to represent the type of chapter tests typically given in secondary classes (Putnam, 1992). Two 35-item cumulative unit exams were constructed. One consisted of open-ended items; the other contained all multiple-choice items. The end-of-year final exam was constructed to be similar to the statewide achievement tests, and as such consisted entirely of multiple-choice items.

Pre- and posttests of oral-reading fluency were also administered. These measures were designed from the content textbook. Students were given a copied page from their world history text that they had not covered and asked to read as quickly and as accurately as they could for one minute. The total number of words read correctly and oral reading errors were recorded. Following this, students were given another page from their text and asked to read an individual paragraph from the page as carefully as they could because they were going to be asked to write a summary sentence following the reading. After reading, the passage was removed and students were asked to write a summary sentence. Following that, students were asked to describe how they came up with that summary sentence and list any steps they used to write that summary.

Qualitative data sources included surveys of student views of instruction in both conditions. Surveys contained both open-ended and Likert-type items. Student surveys included items that asked students their opinions about their respective instructional condition, such as, "Did you enjoy the world history class instruction?" "Did you like working with a partner" (if in the peer-tutoring class)? "Did the (summarization strategy or guided notes) help you remember world history information?" "Do you think the (summarization sheets or guided notes) helped you?" and "Would you like to use these procedures in other classes besides world history?" Students were also asked to describe the typical world history class and asked their preferences for types of class activities. Students in the tutoring condition were asked to write down all the rules and procedures used during peer tutoring, including the summarization strategy steps.

Additional data sources included teacher interviews, teacher journal entries, and observational records based on project staff field notes, the fidelity of treatment implementation checklists, and videotape records.

Scoring

Several scoring rubrics were developed to correspond with the various dependent measures. For example,

scoring rubrics for the open-ended content-area tests consisted of assigning one point for a completely correct response and one-half point for a partially correct response, and zero points for incorrect responses. Multiple-choice items were assigned one point if correct and zero points if incorrect. Three persons unaware of treatment condition scored tests. When inconsistencies of scoring were found, those items and all possible responses were discussed until 100 percent agreement among scorers was reached on all items. After agreement was reached, an additional scorer scored a random sample of 18 percent of tests. Percent of agreement for this set of scores with previous scores was 98.3 percent.

Reading-fluency measures were obtained by calculating the number of correctly read words during one minute. Number of incorrectly read words was also calculated. Reading-comprehension strategies were scored two ways. The student-generated summaries were scored using rubrics. Points were awarded based on the degree of correctness such that a zero point was assigned for no response or a totally incorrect response, one point was assigned for a partially correct response, and two points were awarded for a completely correct response. Similarly, students' strategy responses were assigned points based on the level of sophistication of strategy usage. A zero was assigned for no response or an "I don't know," one point was given for a partial strategy, such as "I remembered the words," two points were awarded for a relevant summarization strategy or other comprehension-fostering strategy, such as, "I looked for the main ideas in the paragraph." Two independent scorers also scored all these measures and any scoring discrepancies were discussed until 100 percent agreement was obtained. In fact, very few initial discrepancies occurred during scoring.

Student surveys were read and answers grouped into similar categories. Fidelity of treatment implementation checklists were analyzed throughout the study and feedback was provided to teachers if it was felt that components of each treatment were not implemented as expected. This happened very infrequently and only at the beginning phases of the study. Videotapes were viewed and analyzed to corroborate observer notes from classes.

RESULTS

Results for the study are presented separately for content tests, reading fluency and comprehension strategy, student attitude toward instruction, and teacher attitude toward instruction.

Content Tests

Dependent variables included the three chapter tests, two cumulative unit tests (open-ended and multiple-choice formats), and an end-of-year final exam cov-

TABLE 2
Means and Standard Deviations on Content Tests
by Treatment Condition

Measure	Condition		Effect Size
	Guided-Notes Mean (SD)	Tutoring Mean (SD)	
Content pretest	2.6 (1.5)	3.6 (1.7)	0.63
Content Ch. 1	9.3 (5.4)	14.2 (2.1)	1.31
Content Ch. 2	6.6 (5.0)	13.8 (7.5)	1.15
Content Ch. 3	5.9 (5.3)	14.0 (2.2)	2.16
Unit open-ended test	10.9 (6.6)	23.1 (10.3)	1.44
Unit multiple-choice test	28.6 (9.6)	54.9 (13.8)	2.25
End-of-year exam			
Items NOT from unit	14.0 (3.4)	14.2 (3.6)	0.06
Items from unit	13.8 (5.2)	22.8 (8.9)	1.28

ering history content for the entire school year. Data for chapter tests, unit tests, and final exam were analyzed separately. Descriptive data for all content tests, and obtained effect sizes, are presented in Table 2. Degrees of freedom varied for different analyses because all students were not available for all tests.

As shown in Table 2, pretest scores were similar across conditions, and very low, with number of items correct in the 7–10 percent range. As pretest scores were not correlated significantly with any other content test score (all $ps > 0.05$), pretests were not employed as covariates in further analyses.

Given that six content tests were given, the probability of a Type I error was potentially enhanced. This issue was addressed by combining the three chapter tests into one repeated-measures analysis; combining the two unit tests into one repeated-measures analysis; and analyzing the end-of-year test separately, separating items from the experimental unit from items from other units covered during the year.¹ For the chapter test analysis, the chapter-by-condition design allowed us to examine the treatment effects across chapters and to determine whether interactions occurred for different chapters. Such an interaction, although not anticipated, would suggest that treatments were more or less effective relative to the specific chapter test administered. A main effect for chapter, in the absence of an interaction effect, would simply suggest that some chapter tests were relatively easier than others for both conditions, and in itself would not be of particular interest to this investigation.

Chapter Tests

The three chapter test scores were entered into a two-way (condition by chapter) analysis of variance (ANOVA), with repeated measures on the chapter variable, which yielded significant differences for experimental condition, $F(1, 13) = 9.31$, $p < 0.01$, favoring the tutoring condition. Significant effects were not

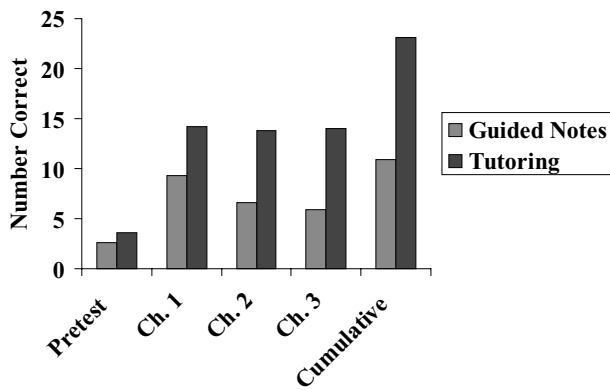


FIGURE 1 Graphic display of content test performance.

observed for chapter, $F(2, 26) = 1.90$, $p = 0.17$, or for condition by chapter interaction, $F(2, 26) = 0.136$, $p = 0.87$. Chapter test scores by condition are presented graphically in Figure 1.

Unit Tests

Cumulative unit test scores were entered into a two-way (condition by test format) ANOVA with repeated measures on the test format variable (open-ended vs. multiple-choice), which yielded significant main effects for condition, $F(1, 12) = 14.15$, $p < 0.01$ (favoring the tutoring condition), test format, $F(1, 12) = 132.09$, $p < 0.001$ (favoring the multiple-choice format), and condition by test format interaction, $F(1, 12) = 10.60$, $p < 0.01$. Analysis of the interaction revealed that the performance of the tutoring-condition students was differentially enhanced on the multiple-choice test. This interaction is represented graphically in Figure 2.

End-of-Year Final Exam

Two scores were computed on the end-of-year final exam. One score included content that had been covered during the study, and another score included content that had been covered at other times during the school year,

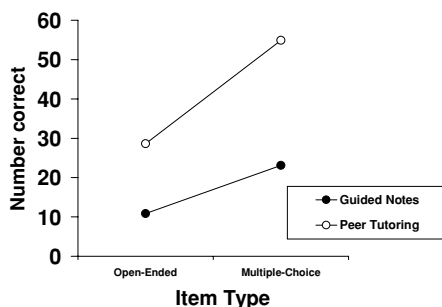


FIGURE 2 Condition-by-item type interaction.

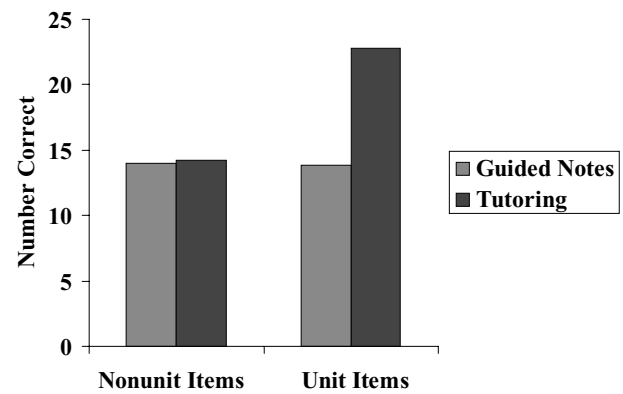


FIGURE 3 Year-end final exam: items covered and not covered during study.

not during the study. Each score was expressed as a percent of items answered correctly. These data were entered into a two-way (condition by content covered) ANOVA with repeated measures on the content covered variable. Significant effects were not observed for condition, $F(1, 9) = 2.32$, $p = 0.16$. However, a main effect for content covered was observed, $F(1, 9) = 7.72$, $p = 0.02$, favoring content covered during the study. A significant condition by content covered interaction was also observed, $F(1, 9) = 8.35$, $p = 0.02$, indicating that tutoring-condition students scored significantly higher on content covered during the study, $t(4) = 3.07$, $p = 0.037$, whereas guided-notes-condition students did not score higher on this content, $t(5) = 0.11$, $p = 0.92$. This interaction is represented in Figure 3.

Reading Fluency and Comprehension Strategy

Fluency scores were based on the number of words read correctly from the world history textbook in one minute. These scores were compared by condition and yielded no significant differences. Students in the peer-tutoring condition read a mean of 81.1 ($SD = 22.56$) words correctly per minute on the pretest, while students in the guided-notes condition read a mean of 86.5 ($SD = 19.09$) words per minute correctly $t(14) = 0.48$, $p = -0.64$. Similarly, students did not differ significantly on reading-fluency measures at posttest, with the peer-tutoring group reading a mean of 89.71 ($SD = 38.37$) words correctly per minute and the guided-notes condition reading a mean number of 99.14 ($SD = 25.78$) words correctly per minute, $t(12) = 0.54$, $p = 0.60$. Neither were differences observed by condition on number of oral reading errors. Peer-tutoring-condition students made an average of 6.1 ($SD = 2.32$) errors at pretest and 3.0 ($SD = 2.08$) at posttest, whereas guided-notes-condition students made an average of 6.3 ($SD = 3.78$) errors at pretest and 4.1 ($SD = 3.13$) at posttest. A two (pretest vs. posttest) by two (tutoring vs. guided-notes) ANOVA, with repeated measures on the pre-posttest

variable, yielded main effects on the pre-posttest variable, $F(1, 11) = 13.36, p < 0.01$, but not for condition, $F(1, 11) = 0.43, p = 0.53$, or pre-posttest by condition interaction, $F(1, 11) = 1.86, p = 0.20$.

At pretest, there were no significant differences between conditions on students' ability to generate a summary sentence after reading a paragraph, or their ability to describe any effective comprehension strategies. Tutoring-condition students scored an average of 1.43 ($SD = 0.53$) and guided-notes-condition students scored an average of 1.33 ($SD = 0.52$) on the strategy pretest. After training, however, tutoring-condition students scored an average of 2.71 ($SD = 0.76$) and guided-notes-condition students scored an average of 1.33 ($SD = 0.52$) on the strategy posttest. A two (pretest vs. posttest) by two (condition) ANOVA, with repeated measures on the pre-posttest variable, yielded significant results for pretest versus posttest, $F(1, 11) = 7.91, p = 0.02$, condition, $F(1, 11) = 9.46, p = 0.01$, and pretest versus posttest by condition interaction, $F(1, 11) = 7.91, p = 0.017$. At posttest, students in the tutoring condition were significantly better at generating summaries of reading materials and more able to describe their use of an effective summarization strategy ($p < 0.05$). Typical strategy responses for students in both conditions at pretest included: "I don't know," "I tried to remember," "I guessed," or "I tried to remember the names." Students in the guided-notes condition provided similar strategic responses at the posttest; whereas reports of students in the tutoring condition included: "I thought of the who and what was happening"; "[I thought of] the main points"; "I thought of the who, the what was happening and tried to put the main facts together."

Student Attitudes Toward Instruction

Following completion of the project, students in both conditions were interviewed regarding their opinions with respect to their particular world history instruction. These interviews included both quantitative (rating scale) and qualitative (open-ended) questions. As part of the interview, students were asked to rate (on a scale of 1 to 5, where 1 = "not at all" and 5 = "a lot") whether they enjoyed the intervention and whether they thought the intervention helped them remember content information. Students in both conditions reported enjoying the intervention (guided notes $M = 4.43, SD = 0.79$, tutoring $M = 4.33, SD = 0.71$; Mann-Whitney $U = 28.50, z = -0.35, ns$) (a nonparametric test was employed because of ceiling effects that restricted variability in these scores, see Ferguson, 1981). However, students in the tutoring condition responded more positively than students in the guided-notes condition when asked whether components of the tutoring program had helped them remember content information (guided notes $M = 3.86, SD = 1.07$, tutoring $M = 4.89, SD = 0.33$; Mann-Whitney $U = 11.50, z = -2.46, p = 0.014$). When asked whether they would

like to use the method in other classes, 28.6 percent of guided-notes-condition students and 85.7 percent of tutoring-condition students replied positively, $\chi^2(1) = 4.46, p = 0.031$, indicating that a greater proportion of tutoring-condition students perceived the versatility of their treatment.

Guided-Notes Condition Interviews

Students were very positive about using the overhead projector in class and enjoyed the opportunity to write in answers on the guided notes using the overhead transparency. However, when asked if they would like to use guided notes in other classes, the majority of students reported less positively, with only two students reporting they would like to use guided notes in other classes. Students were also less positive about having to take turns reading out loud in class, in that almost one-half responded negatively when asked: "Do you like taking turns while reading?" These students also responded generally negatively to the possibility of having to do more reading in history class. Students reported that the textbooks were difficult to read and they did not enjoy reading them. Several students reported that they preferred working on projects using materials other than their assigned books. When asked what they would do differently with the study guides, students provided a wide variety of responses, from "make it short and simple," to "put pictures in study guides and give multiple choice options," to "make it harder." In general, responses of students in this condition were brief and simply stated.

Tutoring Condition Interviews

Students in the tutoring condition responded generally more positively about the instruction during world history. In the tutoring condition, most students reported enjoying peer tutoring and enjoying interacting with partners. One student reported, "The period went by fast and the quarter went by faster, and we still learned." All students also reported that tutoring helped them learn more world history content. They reported that the summarization strategy and fact review sheets used during tutoring helped them remember history content. Several students reported that although they did not enjoy writing summarizations for every paragraph, they felt that they learned how to ask and answer those types of comprehension questions better. When asked, "What did you like best about tutoring?" students mentioned the use of summarization sheets, working and reading with partners, and learning the content with the term going by very quickly. One student reported, "We got through the chapter faster. We didn't take up the whole class reading." When asked about the purpose of tutoring, all students were able to accurately articulate the purpose as, for example, "to see if we could get the important

information from our book while reading and to help us study history.” Moreover, all students accurately described the rules and procedures for tutoring, including the comprehension strategy steps for summarizing information read.

Students in the tutoring condition also had recommendations for the future. Most students in the tutoring condition agreed they would like to use different tutoring formats, and several indicated that they would prefer to write summaries of several paragraphs at a time, rather than individual paragraphs. Most students felt like they should be able to select their own tutoring partners and be able to use new partners whenever they wished. Additionally, many students did not like the idea of having to read the same information twice and said that if they listened well enough they should not have to reread the information their partners just read to them. One student said, “if we get the summarization right [after reading the information once], why do we need to read it twice?” Finally, some students reported that the textbook was very difficult. Several students experienced great difficulties decoding the numerous unfamiliar names of people and places. When they encountered difficult vocabulary, neither partner was very adept at correcting oral reading errors.

Students generally felt tutoring helped them with the world history class. One student remarked, “Yes [it helped]—teachers are pushing you, the time goes faster because you’re concentrating on your work with one person—but it depends on your partner, too. If the partner tries to distract you it’s harder.”

Other Data Sources

Observational notes, videotape records, and student products generally corroborated student reports. It was observed in the tutoring condition that students initially experienced great difficulties asking and answering the reading-comprehension questions. Some students became very frustrated and displayed reactions such as, “I can’t do this,” or “this is stupid,” when required to ask and answer comprehension questions on a paragraph-by-paragraph basis. However, with teacher support, extended practice, feedback, and perseverance, students improved in their reading-comprehension skills. They were then allowed to chunk more content together when asking and answering comprehension questions. For some students, decoding the textbook was very challenging. These students frequently requested teacher assistance with unfamiliar vocabulary. It was also generally observed that students in the tutoring condition remained on task and engaged in relevant academic activities while tutoring, which is probably why many students felt that this was one of their quickest marking periods in the academic year.

Observational records indicated that students in the guided-notes condition tended to be off task more frequently, especially when required to participate in round-robin reading of the textbook. During this time,

students were observed to be fiddling with papers and pencils, talking with neighbors, or putting their heads down on their desks. Students appeared to be more engaged when they were allowed to participate more actively, such as the times when they were allowed to write on the overhead transparency and provide answers to the class during review activities.

Observations yielded some interesting insights following student discussions in both conditions. Most of these students tried very hard to learn very difficult content and they tried to please their teachers. Since the teachers were very accepting of student comments, many students would try to participate in class discussion and review. Frequently, however, they would be able to say only partial words, thoughts, or concepts. Students frequently confused names of individuals and names of countries during these discussions. Students appeared to require even more intensive repetitive instruction, and more opportunities for practicing new information, than was available in either special education world history class setting.

Teacher Attitudes Toward Instruction

Analysis of teacher reports revealed an overall positive support for tutoring over guided-notes instruction. Although these teachers enjoyed teaching and taught with enthusiasm in both conditions, they felt more positively toward instruction during the tutoring condition. Teachers reported enjoying the teacher-researcher partnership collaboration, student interactions, student enthusiasm, student learning, and use of comprehension strategies employed during the tutoring condition. Teachers indicated that they saw benefits associated with the reading-comprehension strategy instruction and the amount of time students devoted to reading in class with partners. Teachers corroborated the researchers’ observation that students were on task more diligently during the tutoring condition than in the guided-notes condition.

Teachers reported the benefits of using comprehension strategy instruction during a content-area class. Teachers also reported that they were initially amazed how difficult it was for the students to ask and answer the comprehension questions, but were encouraged to see improvement with extended repeated practice using the strategy. Again, the concern over the amount of time it required students to effectively learn the strategy came in conflict with the need to cover content for the upcoming statewide competency testing.

Teachers expressed some challenges associated with implementing tutoring with all special education students. For example, they found it challenging to pair students into appropriate dyads. It was particularly challenging for the lower-performing readers. Some students’ oral reading rates were as low as 44 words per minute. This slow rate meant that everything else involving literacy tasks, such as asking and answering the comprehension questions and writing the summary

sentences, also consumed enormous amounts of time. These same students required frequent assistance decoding vocabulary encountered in the text. This resulted in a significantly slower pace at which some partners could proceed through a chapter. However, having said that, teachers also saw the benefit of spending time reading, working on comprehension strategies, and writing summary sentences. Teachers admitted that students needed this time reading and learning comprehension strategies, but that teachers felt pressured to cover content more rapidly for the upcoming statewide competency tests. The tension between allowing sufficient time for learning and moving rapidly through content for state tests was apparent in many of the teachers' responses.

Another challenge consisted of dealing with absences. When partners were absent, teachers had to make on the spot decisions as to whether to pair remaining students together to form groups of three or keep students separate. Since teachers expressed concerns that students might be more off task in a group of three, the most frequent decision was to keep students who were missing partners alone and to take rotating turns acting as a partner during the reading and summarization activities. Although this consumed valuable teacher resources, they felt it was a better decision than forming a potentially volatile group of three.

DISCUSSION

The present investigation compared the effectiveness of a peer tutoring in reading comprehension condition with a guided-notes condition in a world history content area conducted within high school special education settings. The tutoring condition resulted in significantly higher gains on content-area tests, including chapter tests, unit tests, and items from the target unit on an end-of-year final exam. No significant differences were obtained between conditions on measures of reading fluency. However, students in the tutoring condition were also able to write better summary sentences and describe the comprehension-fostering strategy steps at the study's conclusion.

Teacher and student attitudes were overall very positive about their respective instructional conditions. However, students in the tutoring condition reported that they thought tutoring helped them during reading, helped them remember information in world history, and that they would like to use tutoring in other subjects. Conversely, few of the students in the guided-notes condition reported an interest in using that instructional procedure in other classes. Teacher reports corroborated previous research findings on peer tutoring conducted with middle school students. They saw benefits and challenges associated with implementing tutoring in their classes when all students have disabilities. Although the total number of participants was limited, results of the present investigation suggest that

appropriately employed peer-tutoring programs can be used to increase reading-comprehension strategy use and world history learning in special education high school settings. Each finding is discussed separately below.

Students in the peer-tutoring condition outperformed students in the guided-notes condition on all content-area tests. Effect sizes for these comparisons were very substantial, on average in excess of 1.5 standard deviation units. These effects are considerably larger than the average effect size for reciprocal tutoring (0.63) reported in the Mastropieri, Spencer, Scruggs, and Talbott (2000) synthesis of peer-tutoring research. Students in the peer-tutoring condition had numerous opportunities to interact with the history textbook during class time. Partners read selections together twice and then used comprehension-fostering strategies with that material. During the comprehension activity, they asked and answered questions to generate summary sentences on the text material read. Finally, they tutored one another with summary fact sheets of important information contained in the textbook. In this situation, tutoring was the vehicle that enabled students to stay on task and remain actively engaged reading, writing, and asking and answering each other's questions about world history. This type of intensive repetitive instruction apparently resulted in enhanced achievement on chapter tests, cumulative unit tests, and on items on the end-of-year delayed-recall test that were covered during that unit of instruction.

Students in the guided-notes condition also had opportunities to interact with the text material in class. However, the basic instructional format of the guided-notes condition provided far fewer realistic opportunities for students to be so actively engaged in using the textbook. During the guided-notes instruction, students read one at a time, and all worked independently on completing the guided notes, which were then reviewed as a class. Although this procedure has been purported to enhance student learning in previous research, in the present instance students learned far less history content. In previous research, the use of guided notes has been evaluated using single subject methodology in which student performance using guided notes was compared with baseline conditions of, for example, students taking notes independently (e.g., Hamilton et al., 2000), and not with other instructional alternatives. Although students in the guided-notes condition potentially could have interacted with text and text content as much as students in the tutoring condition, the tutor questioning on the summary strategy and summary sheets seemed to result in far greater active engagement. On reflection, it is easy to see how the amount of time students spend interacting intensively with text could be much greater in the peer-tutoring condition compared with the guided-notes condition.

Students in the tutoring condition were able to generate significantly better summary sentences than students in the guided-notes condition at the study's conclusion. This is not surprising because they were given explicit

practice using the summarization strategy. They read paragraphs and asked and answered "Who or what is the paragraph about? What is happening to the who or what? Write a summary sentence." Observations and interviews recorded that these 10th-grade students could not execute this strategy at the beginning of the study independently, and that students experienced great difficulties, and expressed frustration, generating answers to the three summarization strategy questions. Students demonstrated that they could not state who or what was happening in a content-area paragraph, nor could they aptly generate a summary sentence in their own words combining that information. Initially, they had a tendency to copy a sentence from the text as their summary sentence. By the end of the unit, they were much more able to create their own summary sentences. Thinking through the answers to the questions was very difficult for most students. Consequently, their ability to learn the relevant summary information was impeded by their ineffective use of the strategy. This could be due to several reasons. First, the content-area textbooks are more complex and use a very difficult writing style compared with narrative text material. These texts presented content in a very compact manner, rather than an organizational, pleasing manner for readers. This may cause students great difficulty in using independent reading-comprehension strategies effectively.

It is important to note that this investigation represents a comparison of types of instructional strategies in naturalistic settings. As such, there was necessarily some overlap in instructional procedures. For example, even though the summarization strategy was an important component of the tutoring condition, it was not possible (or realistic) to ask the teacher not to ask any comprehension-type questions (e.g., summary, prior knowledge, relational) in the guided-notes condition. However, in this case, the guided-notes condition as implemented represented not only a realistic example of content-area instruction, but the fact that any (albeit nonsystematic) comprehension questioning was employed merely provided a more rigorous test of the tutoring condition, in which strategy instruction was systematically employed. Since alternative methods of implementation of each of these instructional methods are possible, it should be concluded simply that in this investigation, students in the peer-tutoring condition as implemented outperformed students in the guided-notes condition as implemented.

In spite of the content-area learning advantage, no significant differences were found between conditions on measures of reading fluency. This finding is not surprising given the lack of fluency improvements in previous research (e.g., L. S. Fuchs, D. Fuchs, & Kazdan, 1999). However, it was thought that perhaps given the additional time spent reading, students' fluency levels might have been impacted positively. Overall, students in both conditions read slowly and made minor gains in fluency throughout the study. All fluency measures were taken using the regularly assigned world his-

tory textbook. This book was difficult to read due to the numerous unfamiliar names, places, and vocabulary introduced at a very rapid pace. Each paragraph was packed with new facts and details. Perhaps differences would have been found if students had tutored one another on narrative prose with more predictable text; such a possibility, however, requires empirical confirmation.

An important limitation of the present investigation is the fact that each intervention condition was represented by a single classroom, leaving open the possibility that classroom effects could have in some way influenced observed outcomes. Such classroom effects seem unlikely, however, for a number of reasons. First, students in each class were taught by the same teachers, employing the same overall teaching procedures, apart from the independent variable (tutoring vs. guided notes). Second, students were very similar with respect to a number of important variables, including academic achievement, IQ, age, pretest scores, and school attendance. Third, the significant interaction observed between condition and content covered during the study suggests strongly that treatment, and not some other variable, influenced performance on content covered during the study, since both groups performed very similarly on world history content covered at other times during the school year. It should be noted that the sample size in the present investigation was relatively small. Nevertheless, it was sufficiently large to reveal substantial and statistically significant differences on important instructional outcomes as a consequence of instructional treatment.

As students with mild disabilities progress through the grade levels to secondary school, they find less and less regular classroom time allocated to reading, a skill that is necessary for success in school. Within special education settings, teachers are often burdened with large class sizes and widely differing skill levels, making effective reading instruction a significant challenge. The results of the present investigation suggest that students with disabilities can successfully tutor each other in critical reading-comprehension skills while using content-area materials, and that when they do so, their content-area learning improves at a rate greater than that attained through more traditional instruction. Special education teachers of high school students should consider classwide peer tutoring as one important method of delivering high-quality instruction to all students.

NOTE

1. These findings were further confirmed by including all content tests into a multivariate analysis of variance (MANOVA), with condition as the independent variable, which yielded a Wilks $\lambda = 0.062$, $F(6, 4) = 10.04$, $p = 0.021$, for all content tests considered simultaneously, and therefore minimal likelihood that any observed effects

represent Type I errors. A reanalysis of these data using pretest scores as a covariate yielded nearly identical findings, $p = 0.020$, since the pretest scores were nearly identical across conditions. MANOVA was not considered the optimal statistical procedure in this investigation because all students were not present for all measures, resulting in a reduced N , and the MANOVA did not allow for the test of statistical interactions, as did the repeated-measures analysis.

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About the Authors

Margo A. Mastropieri, Ph.D., Professor and Coordinator of Special Education, Graduate School of Education, George Mason University. She received her Ph.D. at Arizona State University. Her current research interests include content-area learning for students with disabilities, metacognitive strategies, and research synthesis.

Thomas E. Scruggs, Ph.D., Director of the Ph.D. in Education Program, Graduate School of Education and Professor of Special Education, George Mason University. He received his Ph.D. at Arizona State University. His current research interests include content-area learning at the middle and secondary levels for students with disabilities and research synthesis.

Vicky G. Spencer, Ph.D., Educational Consultant Training and Technical Assistance Center, Helen A. Kellar Institute for Human disAbilities, Graduate School of Education, George Mason University. She received her Ph.D. at George Mason University in 2001. Her current research interests include peer tutoring and inclusive practices for secondary students with disabilities.

Judith L. Fontana, Doctoral Candidate, George Mason University, Educational Consultant Training and Technical Assistance Center, Helen A. Kellar Institute for Human disAbilities, George Mason University. She received her masters in education from the University of Rochester. Current research interests include instructional strategies to facilitate content-area learning for students with mild disabilities.