

The Impact of Daily Reflection on Long-Term Content Mastery: A Useful Strategy in

Low-Resource Environments

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Abstract

The purpose of this study was to measure the relationship between a reflective activity following content instruction and increased mastery of academic content for students with disabilities in a low-resource school. Participants in this study were students enrolled in a small group section of 20th/21st Century History at a high school in rural West Virginia. Students were identified with the following disabilities: other health impairments (attention deficit hyperactivity disorder), mental impairments, learning disabilities (reading and writing), and behavior disabilities. This project used an ABAB design for the intervention and data collection based on the use of a writing-to-learn strategy. The third and fifth units were taught using a variety of research-based instructional strategies and students were given an assessment following instruction. The fourth and sixth units included an intervention comprised of a reflective writing-to-learn strategy following each lesson. All lessons during the intervention were taught using a variety of research-based instructional strategies; students completed daily reflections, and were given an assessment at the end of each unit. The fourth, fifth, and sixth assessments included questions from the previous units. Seven of the eight students participating in the research demonstrated marked increases in academic achievement with the use of a reflective activity following instruction.

The Impact of Daily Reflection on Long-Term Content Mastery: A Useful Strategy in Low-Resource Environments

The purpose of this paper is to report the findings from a research project examining the impact of daily reflection on long-term content mastery. At a time when many schools struggle to meet the guidelines for adequate yearly performance, finding a cost-effective strategy that will help all students in gaining long-term content mastery is pertinent. The author contends that writing-to-learn strategies are a viable method to increase long-term content mastery.

Students with disabilities often struggle with academic content, regardless of their placement in a general or special education setting. Writing-to-learn strategies provide teachers with activities that are easy to modify to best meet the needs of students with disabilities. These strategies provide students with the tools to assess grade-level academic content. Once students have learned to use writing-to-learn strategies, they become more confident in their own abilities (Smith, Rook, & Smith, 2007).

Review of Literature

What are writing-to-learn strategies?

According to Reaves, Flowers, and Jewell (1993) the idea of using writing-to-learn is based on the concept that when students write they are processing information in a meaningful way. Writing allows students to express thoughts and beliefs, as well as, ask questions and state facts. The authors go on to say that using writing-to-learn strategies can help students make meaningful connections with material. The Literacy Matters Organization (2008) defines writing as an “active process of creation, discovery, reflection, and reinforcement” (¶ 1). Using writing-to-learn strategies in a content

specific environment helps students learn and construct new knowledge. These strategies encourage students to acquire, synthesize and analyze information, while comprehending key ideas (Literacy Matters Organization, 2008).

Dodds and Rice (2009) believe that writing-to-learn should be expressive and encourage students to write about what they think they are learning. They suggest teachers should use writing-to-learn as a way to promote active learning, prompt discussion, and engage all students in higher level thinking. Literacy Matters (2008) explains that students should focus on new ideas and concepts and not be concerned with writing technique. Baker et al. (2008) argue that writing allows students to reflect on knowledge and make connections with new information and ideas. They go on to say that using writing-to-learn strategies help students develop writing skills and to think critically about content.

The advantages of using writing-to-learn strategies are numerous as reported by many researchers (Baker et al., 2009; Dodds & Rice, 2009; Dunlap, 2006; Manzo, 2008). Writing-to-learn strategies get students actively involved in their learning and help students make better connections between prior knowledge and new knowledge (Dodds & Rice, 2009.) Baker et al. (2008) state that using writing-to-learn strategies improves students' comprehension skills and Manzo (2008) contends that using writing-to-learn strategies improves students' overall writing skills. Finally, Dunlap (2006) finds that writing-to-learn strategies help students monitor their own learning and progress toward overall class goals.

Writing-to-learn strategies can take many forms. Dodds and Rice (2009) outline several strategies for classroom use. Picture Perfect is a strategy that uses a graphic

organizer to aid students in making inferences about the message of a picture. The organizer should include space for students to write about people, symbols, and colors used in the picture. It is recommended that students identify and then explain the identification. This strategy is especially useful in the Social Studies content where pictures play an important role in the understanding of people and events.

Probable Passages (Dodds & Rice, 2009) is a strategy that uses a graphic organizer to aid students in identifying key concepts in content reading and organizing them into a prewriting strategy for later work in essay writing. The Probable Passages organizer includes four sections. The first section allows students to write key concepts they find in the reading. The second section is for a prewriting strategy so students can make predictions about the content they will read. The third section is for notes taken during reading. The fourth section is used to document students' thoughts on the reading and reflect back on their thoughts before the reading. This strategy is especially helpful to use when students are reading material that is emotional and/or controversial.

REAP, Read, Encode, Annotate, Ponder (Dodds & Rice, 2009) is a writing-to-learn strategy that also helps build a bridge to content reading. This strategy uses questions and prompts to aid students in reading a passage for content. The organizer helps students to focus on the key ideas of the reading. The first section of this organizer is for students to document their reading and understanding of the author's ideas, as well as, ask questions that help with students' comprehension. The second section of this organizer is for students to put the author's words into their own words by explaining the main ideas of the reading and what they learned from the reading. The third section is for students to explain the author's opinion of the subject and document the main problem

and solutions presented in the reading. The final section is for students to reflect about what they have written and their understanding of the reading.

Another writing-to-learn strategy is entitled *10 and 2*. This strategy is used to provide a reflection break during class lecture. The idea is that students are given two minutes for written reflection about what they have learned for every ten minutes of lecture. Students can do the writing in their notes or on a separate organizer. This is not a graded exercise but used for a quick assessment for student learning. Think-Pair-Share is another writing-to-learn strategy outlined by Dodds and Rice (2009). This strategy has students reflecting on content through writing, pairing with a neighbor to discuss thoughts, and the pairs sharing with the class in a whole class discussion. Again, this strategy is useful for assessment for student learning. Using this strategy allows students the opportunity to take the lead in class discussions, putting them in charge of the learning. Five-minute Quick Write (Dodds & Rice, 2009) is a strategy that has students in writing, addressing an essential question of the lesson. This strategy allows the teacher to assess students' understanding of the lesson objectives and to work on writing skills. It is also suggested that this strategy can be used as a spring board to essay writing.

Journals are a well known and much used writing-to-learn strategy. The purpose of journals is to allow students to free write, making a personal connection with the material being presented. Journals allow students to give a personal example related to the content, making for a meaningful experience for the student. Also, for those often emotional and controversial issues studied in the Social Studies curriculum, students have a personal space to write about what they think about the content. Learning Logs are another structured and content-based writing-to-learn strategy (Dodds & Rice, 2009).

With learning logs, students are asking questions, sorting through information, rethinking what they know, and assessing what they have learned. Learning Logs can be done on a daily basis and turned in or used as a continuous writing and reflective activity for students. Learning Logs can be useful when students are working on a larger project and are often a part of the Project Based Learning unit.

The last writing-to-learn strategy described by Dodds and Rice (2009) is *Hot Cards*. Hot cards are completed on index cards and a result of a direct prompt given by the teacher. Prompts include things such as: list ten facts about today's lesson, describe something that confuses you about the topic, or write three quick sentences summarizing what you learned in class today. This strategy can be used as an exit slip and assessment for student learning.

The use of writing-to-learn strategies in the classroom is important to the research being presented. The goal of the researcher was to identify and make use of a method that would increase the content mastery of students with exceptional needs. The method needed to be something that can be differentiated to meet the individual needs of students. In addition, the method needed to include student reflection on content material and a method for the teacher to assess for student learning.

Writing-to-learn strategies are an essential piece to curriculum and instruction. These strategies are relatively easy to modify and incorporate in the classroom. Teachers should use a variety of writing-to-learn strategies to facilitate and assess students understanding of content. Success for students will come in the form of increased content knowledge and improved literacy skills.

How does writing involve content?

Clark (2007) outlines reasons for the need to teach literacy skills in every content area. She states, “writing is an instrument of thinking that allows students to express their own thoughts” (p. 4). She attempts to persuade teachers that without using writing strategies, the teaching of content and assessing of student learning lack a key component that will help students make lasting connections with material. Smith, Rook, and Smith (2007) suggest the use of writing-to-learn strategies for students with disabilities increases students’ interest in the content being taught. They believe that when students write to learn about something they are demonstrating the knowledge they have of the topic and improving their own self-concept about what they can learn. The idea that writing-to-learn strategies will increase student interest and improve self-concept is of interest to this researcher and adds to the appeal of using writing-to-learn strategies in the classroom.

Conley (2008) promotes the use of cognitive strategies in the acquisition of content. Cognitive strategies include activities like asking questions, summarizing, activating prior knowledge, and organizing information. He elaborates that teaching the literacy skills of thinking, reading, and writing are important to student success in the classroom and believes that students need to master literacy skills to be successful in future education and the workplace. It is easy to make a connection between the writing-to-learn strategies outlined in the previous section and cognitive strategies. The main purpose of this research is to identify one or more methods that are demonstrated to aid in mastery of content. It seems that by incorporating a method that has students using

cognitive strategies, students will then be successful in the goal to improve long term content mastery.

Guterman (2003) posits that students need to write each day and indicates that the writing should require students to use prior knowledge and make connections with new material. Corden (2003) argues that writing is necessary for student achievement and urges the use of questions to help students focus on the key points of the lesson. Wolters (2003) advocates the specific technique of reflective writing and believes that by teaching students to reflect, they will increase the role they play in their own learning. Ward and Wandersee (2002) believe that writing-to-learn strategies will help students develop a real understanding of abstract concepts, giving students the tools to really work with information and using writing to represent what they are learning. Taking into account the ideas presented, it seems clear that students need to write each day using an activity that promotes recall and synthesis of the information presented in class. For example, students should list the factors that lead to the fall of the Roman Empire and offer an opinion of a possible change that would have helped the empire return to its previous status of superpower.

Lawwill (1999) says that writing-to-learn strategies are important to the success of students and outlines the higher level thinking and reasoning skills students use when they are engaged with writing in the content area. He believes teachers should encourage composition while taking the role of the coach and not of judge. He argues that the intent of writing-to-learn in the content area is not for the non-English teacher to become the grammar police, but to develop literacy skills in students. This supports having students write about a current issue like tolerance while they are studying the Holocaust. Students

will be learning and studying class content and writing about a current issue that will be meaningful to their lives.

In the work of Reaves, Flowers, and Jewell (1993) the authors state that students will retain more information with writing-to-learn techniques over a period of time. Their research showed that students taught with writing-to-learn strategies earned lower scores on the initial test, but higher scores on a test of the material several weeks after completion, suggesting that students will have greater long-term content knowledge through the use of writing-to-learn strategies. This work helps to address the central point of the current research, which is a method that will help to increase the long term content mastery of students.

How does writing affect learning?

Many researchers agree that writing has an effect on learning (Clark, 2007; Lawwill, 1999; Manzo, 2008; Ward & Wondersee, 2002). It is believed that writing affects learning by increasing understanding of the content, improving students' motivation to learn, and helping students raise their level of self-confidence as an active learner in the classroom. Research (Lawwill, 1999; Reeves, Flowers & Jewell, 1993; Ward & Wondersee, 2002) demonstrates varied results in the benefits of content mastery for every student; however, every student did benefit by improving writing and thinking skills.

Clark (2007) believes that students need to be active in learning and that writing is a necessary component to facilitate student learning, and equates active learning with active thinking. Wolters (2003) extends this idea when he asserts that students need to get to the point where they understand what tools to use to take charge of their own

learning. He believes students need to be motivated to learn and will do so by using tools that aid learning. In addition Smith, Rook, and Smith (2007) suggest that students who think they are capable of learning material are more willing to attempt tasks designed for instruction. The authors believe the evidence students see through writing-to-learn strategies gives them confidence. Already believing that students need to be an active participant in their own learning, this researcher finds it of interest that writing-to-learn strategies are suggested to increase students' self-confidence in learning. From personal observation, many students with disabilities don't believe they can learn anything. It seems obvious that a strategy that will help all students see themselves as learners should be looked at closely for implantation in the classroom.

In their research, Ward and Wandersee (2002) believe that writing helps students make life-long connections with information. They support the understanding that students learn to make connections and to put information into categories by using writing-to-learn strategies. Ward and Wandersee's research found that students improved grades, became more active learners, and showed evidenced of metacognitive awareness of the process of thinking about information. Social Studies instruction is all about teaching students to make connections and work with information. In the history classroom, students look at the past and make connections with the present and predications for the future. For example, issues like immigration can easily be broken into these categories. Students can write about the positive and negative effects from the past; write about current local, national, and global immigration issues, while including workable solutions for those issues; in addition to making predictions about future needs for immigration policies.

Conley (2008) expresses the need for teachers to explain the importance of writing while modeling the writing-to-learn strategy. He believes teachers need to be aware of many cognitive strategies and model appropriate strategies in the classroom that support the idea that students' need to be taught to think. Dunlap (2006) suggests that if students are taught to be reflective in one classroom, they will learn to be reflective in other classrooms and eventually carry that into their life outside the school environment. She suggests teachers should start the process with a simple recall question before asking students to write about the deeper meaning or implication of a topic. It seems obvious that a variety of writing-to-learn strategies should be used in the classroom. By using a graphic organizer like the Know, Wonder, Learn chart (KWL) or a concept web, students are learning a new way to work with and organize information.

Baker et al. (2008) relate that reflection needs to be a part of the writing-to-learn strategy. They suggest that writing will help students transition from sitting in the classroom to one of ownership of their learning. They believe that a reflective writing-to-learn strategy will increase motivation to learn. Reeves, Flowers, and Jewell (1993) found that students retained more information over time with the incorporation of writing-to-learn strategies in the classroom.

Lawwill (1999) found the use of writing-to-learn strategies in the classroom beneficial to student learning and understanding. He suggests the use of an exit slip and varying the writing prompt from identification and recall to asking and answering questions. Corden (2003) found that students who used a daily writing-to-learn strategy showed gains in overall writing and thinking skills, as well as content knowledge.

Given a review of the literature, an effective method to increase students' long term content mastery should include a writing-to-learn strategy. Many of the writing-to-learn strategies are already in place in the researcher's classroom. Things such as using graphic organizers for working with information and guides to help students when reading content material are part of daily instruction. It seems that a critical strategy for increasing students' long term content mastery is one that has students recalling information, asking questions, and reflecting on what they are learning each day.

Considering this information, with beliefs and ideas already stated, and the unique needs of the students, the researcher determined the best writing-to-learn strategy for this project would be a variation of the *Hot Card* strategy. This strategy provides students with the opportunity to write, recall information, ask questions, and reflect upon what they are learning.

Method

This research was conducted with students in a small group special education self-contained classroom. The class content was 20th/21st Century History. This class is a core academic course for junior level high school students.

Setting

This research was conducted in a public school in rural West Virginia. The school is a high school serving students in grades nine, ten, eleven, and twelve. The student body is comprised of approximately 850 students. The teaching staff numbered sixty-five with three administrators. Approximately thirty-nine percent of the students are considered low-income. The percent of the student body that is white is approximately ninety-seven. The attendance rate for the school is reported as 93.93%.

The graduation rate is reported 84.95% and the drop-out rate is reported as 4.30%.

According to data published by the West Virginia Department of Education, the last year the school achieved adequate yearly performance (AYP) status was the 2003-2004 academic year.

The state of West Virginia measures AYP in the areas of reading language arts and math. High school students are measured in grade 10. In the school where this research was conducted, 68.6% of the students scored at or above mastery in reading language arts, while 65.8% of the students in the county and 73.9% of students in the state scored at or above mastery in reading language arts. Additionally, a little more than half, 55.3% of the students in the school identified as low-socio-economic-status (low SES) scored at or above mastery level on the state test in reading language arts, while approximately one-third, or 33.3% of the students identified as receiving special education services scored at or above mastery in reading language arts.

The school percentage for scoring at or above mastery for math was 62%. The district rated 58.7% and the state rate of students reaching mastery or above was 68%. The students in the school identified as low SES scoring at or above mastery in math were reported at 54.8%. The district reported 63.4% of students scoring at or above mastery in math and the state reported 67.5% of the students with low SES scoring at or above mastery in math. At the school level, 28.9% of the students identified as receiving special education services scored at or above mastery in math. As compared to the district rates of 38.4% and a state rate of 41.9% of the students identified as receiving special education services scoring at or above mastery in math.

The county has seven elementary schools, one middle school, three high schools, and one career and technical center. The population of the county is 25,957 with 4,399 students enrolled in the county public school system. Of the students enrolled in the county public school system, 49.92% are reported to be low income, and 97.79% of the enrolled students are white. The county attendance rate is reported as 96.01%.

Graduation rate for the county is reported as 82.55%, while the drop-out rate is reported as 3.20%.

Participants

The class had a total of eight students, seven juniors and one sophomore. The class met daily for a total of ninety minutes for eighteen weeks. Students were identified with the following disabilities: other health impairments (attention deficit hyperactivity disorder), mental impairments, learning disabilities (reading and writing), and behavior disabilities. Students were assigned a three digit number for the study that would correlate to the teacher grade book. The first part of the number represented the grade level and the third number correlated to the line in the teacher grade book.

Student 111 was sixteen years of age during the study, and was diagnosed with health impairments (attention deficit hyperactivity disorder) by the school-based eligibility committee. This student's least restrictive environment was determined to be a small group special education setting, and the student received direct services from an intervention specialist for all core academic classes. Modifications relevant to social studies for this student included chunked curriculum, oral testing with prompting, guiding reading and writing activities, as well as, tests with no more than six questions in each section.

Student 112 was a seventeen year old female, and was diagnosed with mental impairments by a school-based eligibility committee. This student's least restrictive environment was determined to be a small group special education setting, and the student received direct services from an intervention specialist for all core academic classes. Modifications relevant to social studies for this student included teacher-created organizers for note-taking, oral testing with reduction in questions by 30%, teacher read assignments, outline for all writing, and re-submission of assignments scored less than 65%.

Student 113 was a seventeen year old female, diagnosed with a learning disability (reading) by a school-based eligibility committee. The student's least restrictive environment was determined to be a small group special education setting, and the student received direct services from an intervention specialist for English and social studies classes and collaboration services from an intervention specialist in math and science classes. Modifications relevant to social studies for this student included guides for reading and writing exercises, teacher supported reading for all content reading, and oral testing with rephrasing.

Student 114 was a seventeen year old male, diagnosed with a learning disability (writing) by a school-based eligibility committee. The student's least restrictive environment was determined to be a small group special education setting. This was the second attempt by the student to pass this History course. The first attempt was in the general education setting with collaboration services. The student received direct services from an intervention specialist for English and social studies and collaboration services from an intervention specialist for math and science. Modifications relevant to

social studies for this student included guides for all writing activities, teacher-provided structure for all writing beyond one paragraph, and guides for note-taking.

Student 115 was a seventeen year old female, diagnosed with a mental impairment by a school-based eligibility committee. The student's least restrictive environment was determined to be a small group special education setting, and the student received direct services from an intervention specialist for all core academic courses. Modifications relevant to social studies for this student included organizers for note-taking, oral testing with prompts and rephrasing, teacher-read assignments, extended time (all work) and a daily work log completed by teacher, student and parent to ensure communication of progress and learning.

Student 116 was an eighteen year old male, diagnosed with a behavioral disability by a school-based eligibility committee. The student's least restrictive environment was determined to be a small group special education setting, and the student received direct services from an intervention specialist for all core academic courses. Modifications relevant to social studies include a positive behavior support system with rewards, oral testing with prompts, and extended time for all class work and assignments.

Student 117 was a sixteen year old male, diagnosed with a learning disability (reading) by a school-based eligibility committee. The student's least restrictive environment was determined to be a small group special education setting, and the student received direct services from an intervention specialist for all core academic courses. Modifications relevant to social studies included flash cards for vocabulary development, teacher-read assignments, supported reading practice, oral testing, note-taking guides for reading, and extended time.

Student 108 was a sixteen year old male, diagnosed with a learning disability (reading) by a school-based eligibility committee. The student's least restrictive environment was determined to be a small group special education for English and social studies classes and general education setting with collaboration services for math and science. Modifications relevant to social studies include guides for reading activities; teacher-supported reading practice, and oral testing.

Instruments

Hot card. The instrument used to collect the data for this research was an exit slip. An exit slip is used at the end of a class. Typically, students complete an activity, in this case a writing-to-learn strategy, after the instruction is given and submit it to the teacher as they are leaving the class. The writing-to-learn strategy used was a variation of the *Hot Card*. The purpose for using the exit slip was to incorporate an activity into the class that would not disrupt the flow of the class. It contained a place for students to list what was learned, ask questions about content, and offer a thought or idea about the larger meaning or implications of the lesson.

Unit assessments. The instrument utilized to measure content knowledge for each unit of study was a unit assessment. Each assessment was developed by the teacher using the test generator that is part of the approved instructional materials. The teacher chose each question for the assessment. The assessments were in the same format for each unit and contained multiple choice, fill in the blank, and constructed response. Each assessment contained twenty-five questions from the current unit of study and two questions from each past unit. The assessment was modified to meet the individual needs of each of the eight students per the guidelines of each student's individual education

plans (IEP). The assessment measured the content standards taught during the unit of instruction, as well as important concepts from previous units. The computer program used to develop the unit test is approved by the West Virginia Department of Education and adopted by the County Board of Education.

Procedure

This study followed an ABAB design. Every student in the class participated in the study as part of the regular classroom curriculum. Students completed a daily exit slip asking them to identify three things learned from the lesson, ask two questions about the lesson, and express a thought or idea about the larger implication of the lesson. Exit slips were evaluated daily by the teacher and used to adjust the plans for the next day's lesson in the unit.

The teacher reviewed each exit slip, looking at each to determine which ideas most students recognized as being important. This allowed the teacher to see what common identifications were made by students. It is common in this class room to begin each class with a bell ringer activity. Bell ringers are activities that students can complete independently, while the teacher takes attendance and returns the previous day's work. The bell ringer activity is typically used to review previously taught material. During this research project, the bell ringer activity asked students to recall information that was identified on the previous day's exit slip. This decision was made to help boost students' confidence about, and reinforce the material being taught and learned.

On the exit slip, students also wrote questions they had about the lesson content. The students' questions were used in the review of the content of the previous lesson

before introducing new content. This decision was made in an effort to ensure students had a strong understanding of the material before introducing new content.

Another consistent part of the classroom procedures during the research was the use of a Big Idea poster. This poster was used to record the main concepts taught during a unit of study and the students' ideas about application of historical concepts to the present day. The idea was for students to see the relevance of historical concepts. Students' thoughts and ideas about the larger concepts in the lesson were recorded on the Big Idea poster each day. The teacher did this to help review content and to help students see connections between the history and the present, with the hope that they would be able to use the information to make predictions about the future.

Students were given an appropriate assessment to measure the content standards taught during the unit of instruction. Each assessment was designed to measure the content standards being taught during the unit, as well as meet the individual needs of each student as outlined in their individual education plans. Upon completion the teacher graded and recorded the scores.

A typical unit without the intervention lasted from seven to ten class periods. Each lesson began with a bell ringer activity used to activate prior knowledge relevant to the day's lesson. Instructional activities included note-taking; discussion; guided reading practice; analyzing primary source documents; interpreting and creating maps, charts, and graphs; an individual or team project; as well as writing across the curriculum activities. Each unit contained the Big Idea poster for that unit, which was used to keep track of major concepts being studied and help students make connections with material and how the information applied to present day. The unit was assessed using multiple choice, fill-

in-the-blank, and constructed response questions and focused on concepts from the current unit and major concepts from the previous units.

A typical intervention unit lasted from seven to ten class periods. Each lesson began with a bell ringer activity used to activate prior knowledge relevant to the day's lesson. Each lesson ended with the writing-to-learn intervention strategies. Instructional strategies included note-taking; discussion; guided reading practice; analyzing primary source documents; interpreting and creating maps, charts, and graphs; and individual or team project; as well as writing across the curriculum activities. Each unit contained the Big Idea poster for that unit. The unit was assessed with a test containing multiple choice, fill-in-the-blank and constructed response questions and focused on concepts from the current unit and major concepts from previous units.

The first phase of this project lasted eight days. The unit topic was America and the World. Lesson topics included United States imperialism; acquiring Hawaii; United States involvement in China; Open Door Policy; United States relations with Japan; Spanish-American War; United States relations in Latin America; building the Panama Canal; and United States relations with Mexico. A variety of research-based instructional strategies were utilized, as described above. The assessment took the form of twenty-five multiple choice, fill-in-the-blank, and constructed response questions.

The second phase of this project lasted seven days, with the unit of study focusing on World War I. Lesson topics included causes of the war; military tactics; idea of neutrality; events bringing the United States into the war; effect of the war in the United States; events leading to the end of the war; and peace and global impact of the war. A variety of research-based instructional strategies were utilized, as described above.

Students also completed the intervention, a daily *Hot Card*, as an exit slip. The assessment took the form of twenty-five questions covering the content listed above, as well as two questions from the previous unit.

The third phase of the project took nine days. The unit of study was the 1920s. Lesson topics included labor movements; threat of communism; women's suffrage; racial tensions; immigration issues; the Jazz Age; prohibition; and American culture of the 1920s. A variety of research-based instructional strategies were utilized, as described above. The assessment took the form of twenty-five questions covering the content outlined for the unit, as well as two questions each from the previous units described.

The fourth phase of the project lasted eleven days. The unit topic was the Great Depression and the New Deal. Lesson topics included the stock market crash of 1929; banking crisis; business failures; global depression; unemployment concerns; urban and rural life; dust bowl; popular culture of 1930s; Hoover's policies; election of 1932; and Roosevelt's policies. Again, students completed the intervention, a daily *Hot Card*, as an exit slip. The assessment included twenty-five questions covering the concepts for this unit, as well as two questions from each of the three previous units described.

In summary, this study looked at the impact of a daily reflective activity on long-term content mastery. The students participating in the study all had an identified disability and lived in a rural community. Each of these students was in a small group special education class. The study used the ABAB design, with the intervention occurring in the B phase. Each phase of the study was assessed to collect evidence of student understanding of historical concepts.

Results

The purpose of this study was to look at the impact of a daily reflective activity on long-term content mastery. The project followed the ABAB design. Data was collected from each unit assessment, with the teacher analyzing the test scores from each phase of the project. Results are reported for each phase of the project.

Phase A – America and the World

This section describes the results from the first phase of the project. The unit topic was America and the World. This unit of study was presented through a variety of research-based strategies as outlined in the section above. Each student participated in the unit and completed the unit assessment focusing on the major concepts covered in this unit. Table 1 reports student scores on the assessment of this phase.

Table 1

Final Scores for America and the World

Student	Disability	Assessment Score
111	OHI-ADHD	83%
112	MI	67%
113	LD	77%
114	LD	80%
115	MI	70%
116	BD	83%
117	LD	80%
108	LD	87%

Phase B – World War I

This section reports scores for the second phase of the project, and represents the first time students completed the Exit Slip intervention. The unit topic was World War I and students were instructed with a variety of research-based strategies. Each student

completed the unit of instruction and was given an assessment focusing on the major concepts of World War I. The assessment also included two questions from the previous unit of instruction on America and the World. Table 2 reports the overall score for each student on the unit assessment and includes a column indicating if their response to the two questions from the previous unit were correct.

Table 2

Final Scores from World War I and evidence of Long Term Content Mastery

Student	Disability	Assessment Score	Evidence of long-term content mastery – American and the World
111	OHI-ADHD	97%	2 of 2 correct
112	MI	37%	0 of 2 correct
113	LD	87%	1 of 2 correct
114	LD	90%	1 of 2 correct
115	MI	77%	1 of 2 correct
116	BD	80%	0 of 2 correct
117	LD	87%	1 of 2 correct
108	LD	93%	2 of 2 correct

Phase A – The 1920s

This section provides results from the third phase of the project and a return to design A (no intervention). The unit topic was the 1920s. Students were instructed with a variety of research-based strategies, as outlined above. Students did not complete the intervention during this unit of study. The unit assessment focusing on the major concepts taught during this unit and included two questions from the unit on America and the World and two questions from the unit on World War I. Table 3 illustrates the data from the unit assessment.

Table 3

Final Scores from the 1920s Unit of Study and Evidence of Long Term Content Mastery

Student	Disability	Assessment Score	Evidence of long-term content mastery – American and the World	Evidence of long-term content mastery – World War I
111	OHI-ADHD	87%	1 of 2 correct	2 of 2 correct
112	MI	57%	0 of 2 correct	1 of 2 correct
113	LD	80%	1 of 2 correct	2 of 2 correct
114	LD	87%	1 of 2 correct	2 of 2 correct
115	MI	87%	0 of 2 correct	1 of 2 correct
116	BD	80%	0 of 2 correct	2 of 2 correct
117	LD	90%	1 of 2 correct	2 of 2 correct
108	LD	90%	2 of 2 correct	2 of 2 correct

Phase B – The Great Depression and The New Deal

The last phase of this project was the final intervention phase, phase B (use of intervention). The topic of study for this unit was the Great Depression and the New Deal. Students were instructed using a variety of research-based strategies, as described earlier in the method section. Students also completed the daily exit slip, allowing for both reflection and questioning of ideas and concepts. The assessment focused on the major concepts from the unit and included two questions from the previous units on America and the World, two questions from World War I, and two questions from the 1920s unit. Table 4 reports the assessment scores and the evidence of long-term content mastery.

Table 4

Unit Scores from The Great Depression and The New Deal and Evidence of Long Term

Content Mastery

Student	Disability	Assessment Score	Evidence of long-term content mastery – American and the World	Evidence of long-term content mastery – World War I	Evidence of long-term content mastery – 1920s
111	OHI-ADHD	100%	1 of 2 correct	2 of 2 correct	2 of 2 correct
112	MI	70%	0 of 2 correct	0 of 2 correct	0 of 2 correct
113	LD	90%	1 of 2 correct	2 of 2 correct	2 of 2 correct
114	LD	97%	1 of 2 correct	2 of 2 correct	2 of 2 correct
115	MI	90%	0 of 2 correct	1 of 2 correct	1 of 2 correct
116	BD	97%	0 of 2 correct	2 of 2 correct	1 of 2 correct
117	LD	97%	2 of 2 correct	2 of 2 correct	2 of 2 correct
108	LD	100%	2 of 2 correct	2 of 2 correct	2 of 2 correct

Table 5 reports the results of all students on assessments. The columns highlighted with yellow denote the intervention phases.

Table 5

Score by Unit

Student	America and the World	World War I	The 1920s	The Great Depression and the New Deal
111	83%	97%	87%	100%
112	67%	37%	57%	70%
113	77%	87%	80%	90%
114	80%	90%	87%	90%
115	70%	77%	87%	90%
116	83%	80%	80%	97%
117	80%	87%	90%	97%
108	87%	93%	90%	100%

Table 6 reports the results of all students in the area of content mastery. Data is reported for each unit of this project, as well as the data from the extra questions added to

the assessment on the next unit. The columns highlighted with yellow denote the intervention phases of the project.

Table 6

Content Mastery Score by Unit

Student	Unit Assessment Content	America and the World	World War I	The 1920s	The Great Depression and the New Deal
111	World War I	2 of 2			
111	the 1920s	1 of 2	2 of 2		
111	Great Depression & New Deal	1 of 2	2 of 2	2 of 2	
111	World War II	1 of 2	2 of 2	1 of 2	2 of 2
112	World War I	0 of 2			
112	the 1920s	0 of 2	1 of 2		
112	Great Depression & New Deal	0 of 2	0 of 2	0 of 2	
112	World War II	0 of 2	0 of 2	0 of 2	1 of 2
113	World War I	1 of 2			
113	the 1920s	1 of 2	2 of 2		
113	Great Depression & New Deal	1 of 2	2 of 2	2 of 2	
113	World War II	1 of 2	2 of 2	1 of 2	2 of 2
114	World War I	1 of 2			
114	the 1920s	1 of 2	2 of 2		
114	Great Depression & New Deal	1 of 2	2 of 2	2 of 2	
114	World War II	0 of 2	2 of 2	1 of 2	2 of 2
115	World War I	1 of 2			
115	the 1920s	0 of 2	1 of 2		
115	Great Depression & New Deal	0 of 2	1 of 2	1 of 2	

115	World War II	0 of 2	0 of 2	0 of 2	2 of 2
116	World War I	0 of 2			
116	the 1920s	0 of 2	2 of 2		
116	Great Depression & New Deal	0 of 2	2 of 2	1 of 2	
116	World War II	0 of 2	2 of 2	1 of 2	2 of 2
117	World War I	1 of 2			
117	the 1920s	1 of 2	2 of 2		
117	Great Depression & New Deal	2 of 2	2 of 2	2 of 2	
117	World War II	2 of 2	2 of 2	2 of 2	2 of 2
108	World War I	2 of 2			
108	the 1920s	2 of 2	2 of 2		
108	Great Depression & New Deal	2 of 2	2 of 2	2 of 2	
108	World War II	2 of 2	2 of 2	2 of 2	2 of 2

In summary, four units of study were included in the research project. Students completed the intervention during the second and fourth phase of the project. Data was recorded from each unit and reported in the tables above.

Discussion, Recommendations and Conclusions

The purpose of this study was to determine the effectiveness of writing-to-learn strategies on long-term content mastery. Eight students with mild to moderate disabilities participated in the study. The hypothesis was that writing-to-learn strategies are a viable method to increase long-term content mastery. The study followed an ABAB design and the intervention consisted of a writing-to-learn strategy. Students' content mastery was assessed with a unit assessment and the results were presented in the previous section.

Seven of the eight students participating in this study showed evidence of long-term content mastery on the concepts that were assessed after the unit of study was completed. One student showed evidence of short-term content mastery. As demonstrated in the results, the majority of the students achieved higher scores on the assessment at the end of each of the intervention phases. Each student with an identified learning disability benefited from using a daily reflective exit activity as evidenced by increased achievement as measured by unit assessment scores, as well as evidence of long-term content mastery of the major concepts taught during the intervention phase. One student diagnosed with OHI-ADHD, also achieved higher scores on unit assessments and long-term content mastery of the major concepts. Two of the students, identified with mild mental impairments, showed evidence of short-term content mastery of the major concepts taught during the intervention phases.

The literature promotes the use of writing-to-learn strategies as a way to increase student mastery of content, as well as helping boost confidence as a learner. Students participating in this study appeared to increase in confidence in their ability to learn as the class proceeded. In addition, some students chose to complete the intervention even after the study was completed. As suggested by the literature, each participant in this study demonstrated benefits from the daily reflective exit activity.

At a time in education when students are measured by the same standards, a strategy that helps increase long-term content mastery is critical. The idea that writing-to-learn strategies help improve the level of mastery in each content area was presented. None of the studies found in the review of literature reported any negative results. Not all students benefited to the same level, but all students did benefit.

The theoretical implications of the research and findings from this project indicate that writing-to-learn strategies are a viable method to increase students' mastery level of content, regardless of ability. In theory students instructed with a variety of research-based methods and a strong writing-to-learn component that includes a daily reflective activity will perform at higher levels on unit assessments and achieve some level of long-term mastery.

Implications for Practice

Writing-to-learn strategies are research-based and easily modified to meet the curriculum needs of the teacher and the educational needs of students. These strategies provide a method for content area teachers to incorporate writing into the curriculum. The strategies have also been suggested to improve students' thinking skills, as well as increase students' overall confidence in their learning ability. When writing-to-learn strategies are taught to high school age students, it provides them with a foundation for writing and comprehension of content for life beyond the high school.

Student achievement can be improved through the incorporation of writing-to-learn strategies. There are many books and journals that outline writing-to-learn strategies and encourage teachers to use variations of these strategies in their classroom. Teachers not familiar with writing-to-learn strategies should be trained in the use of these strategies for their content areas. This project found writing-to-learn strategies to be beneficial for students with disabilities. Intervention specialists can teach the reflective writing strategies to students as a way to help them gain a better understanding of the content material. Reflective writing-to-learn strategies, such as the exit slip used in this

project, can be included as adaptations and strategies in the students' IEP to enhance content mastery.

The findings from this project demonstrate no negative impact for using a daily reflective writing-to-learn strategy to aid students' understanding of the major concepts in the content area. Both general and special education teachers can incorporate writing-to-learn strategies into the curriculum. Reflective writing-to-learn strategies allow students to express their thoughts and improve their understanding of the content and what they are learning. They also help students document and develop their own thoughts regarding major concepts being studied. The students will benefit from improved writing and critical thinking skills, as well as increased confidence, providing a driving force in their own learning and understanding.

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