**Methods Outline**

1. Design
   1. Quasi-experimental design
      1. To determine the effects of a computer based graphic organizer with embedded self-regulated learning strategies on the argumentative writing (accuracy, holistic quality, length) of students with disabilities in the content areas of science and social studies.
      2. To determine if a computer based graphic organizer with embedded self-regulated learning strategies increases the self-regulation of students with high incidence disabilities.
      3. To determine if increase in writing quality increases the content learning of students with high incidence disabilities.
   2. Random assignment to experimental and comparison group by classroom
   3. Random assignment of students with high-incidence disabilities (if possible)
2. Setting
   1. High-need public elementary school
   2. Serves students in grades K-6
   3. Study will occur in students classroom with remediation sessions occurring in special education resource room
3. Participants
   1. Approximately 100 students
   2. Includes students with low socio-economic status
   3. Racially diverse
   4. Students in fourth through sixth grade
      1. Two classrooms for each grade level
   5. Students in study will include students with learning disabilities, emotional and behavioral disorders, mild intellectual disabilities, struggling writings, and typical writers.
   6. Eight teachers; six general education and two special education teachers
4. Teacher Training
   1. Eight hours or professional development
      1. Purpose of this research
      2. Review of language arts lesson
      3. Collaborative planning of content area lessons
      4. Review of lessons and CBGO
      5. Feedback
5. Materials
   1. Teacher materials
      1. Binders containing the following
         1. Lesson plans
         2. Teacher scripts
         3. Fidelity checklist
         4. Students materials
         5. Teacher answer sheets
   2. Student materials
      1. Computer based graphic organizer
      2. Lesson materials
         1. Lesson 1: Student agenda, IDEAS strategy card with strategy and transition words, sample argumentative paragraph, and argumentative paragraph labeling activity.
         2. Lesson 2: Student agenda, warm up activity, scavenger hunt activity
         3. Lesson 3: Student agenda, warm up activity, what’s missing activity, graphic organizer with argumentative prompt for guided practice
         4. Lesson 4: Student agenda, warm up activity, graphic organizer with argumentative prompt for independent practice
         5. Lesson 5: Student agenda, argumentative prompt
   3. Observer materials
      1. Fidelity checklist
      2. Quality of instruction fidelity rubric
6. Experimental Condition
   1. Three experimental groups
      1. One group for each grade level: fourth, fifth, and sixth
      2. Random assignment by group to experimental condition
      3. Random assignment of students with disabilities to experimental or comparison group
      4. Experimental group contains students with and without high incidence disabilities
   2. Argumentative Writing Pre-test
      1. Students will write an argumentative paragraph using a prompt in the science content area. Students will respond to prompt on computer.
   3. Strategy and writing interview
      1. Students will answer questions about what they think about their writing (while looking at their writing sample from pre-test) and answer questions about the strategy they used and what they liked and thought they could improve about their writing.
      2. A percentage of students from the entire sample will be selected for interview.
         1. Stratified to include interviews of students with disabilities, low writers, and typical writers
   4. Motivation and efficacy survey
      1. All students will answer a self-efficacy and motivation to write survey
   5. Content Pre-test
      1. Students will answer multiple choice and content interview questions about the science topic.
      2. Both the writing prompt and content assessment will be the same as the post-test assessment (identical prompt and content)
   6. CBGO and Argumentative Essay Lessons
      1. Four lessons during language arts block
         1. Lesson 1: Introduction to using a strategy and planning to become a better writer and developing an argument in writing
         2. Lesson 2: Introduction to self-regulated strategies
         3. Lesson 3: Guided practice in using graphic organizer to answer an argumentative prompt in science content area
         4. Lesson 4: Independent practice in using graphic organizer to answer argumentative prompt in science content area
         5. Remediation lessons: Students will have to reach a certain criteria on a hallmark assignment during each lesson. Students who do not meet criteria will have a remediation lesson before the subsequent lesson.
      2. Four practice lessons during science block
         1. Combination of science content and writing practice
         2. All lessons will be on the same topic (i.e. the sun) and each text will provide new information about the topic.
            1. Lessons 1-4: Teacher introduces science topic. Reviews key vocabulary and connects to previous knowledge. Teacher reads a text (approximately 500 words) to students and reviews concepts in the text. Each text will provide new information or new perspectives about the topic.
            2. Text read by teacher will be modified to fit within the number of words and on the student’s grade level.
            3. Argumentative Writing

After the content in each lesson, students will answer an argumentative prompt about the text read in class using the CBGO

Students will receive support from teacher as needed

Student writing will be used to determine student understanding of the content.

* + 1. Argumentative Writing Post-test
       1. Students will answer an argumentative prompt about the science topic.
       2. Students will use background knowledge to answer prompt
       3. Students will not be able to review to text during the lesson; however, the argumentative prompt will contain a brief summary (approximately 20-30 words) as support to answer the question.
    2. Content Post-Test
       1. Students will answer multiple choice and content interview questions about the content learned during the four content lessons.
    3. Strategy and writing post-interview
       1. Students will answer questions about what they think about their writing (while looking at their writing sample from pre-test and post-test) and answer questions about the strategy and self-regulation they used, how they think it helped their writing, what they liked about their writing and how they think it improved.
    4. Self-efficacy/motivation and writing post-test

1. Comparison Condition
   1. Three comparison groups
      1. One group for each grade level; fourth, fifth, and sixth
      2. Comparison group contains students with and without high incidence disabilities
   2. Argumentative writing pre-test
      1. Students will respond to an argumentative science prompt using a computer and no other support.
   3. Content pre-test
      1. Students will answer multiple choice and content interview questions
   4. Strategy and writing interview
      1. Students will answer questions about what they think about their writing (while looking at their writing samples from post-test and pre-test) and answer questions about the strategy they used and what they liked and thought they could improve about their writing.
      2. A percentage of students from the entire sample will be selected for interview.
         1. Stratified to include interviews of students with disabilities, low writers, and typical writers
   5. Self-efficacy/Motivation Pre-Test
   6. Writing Process Lessons
      1. Four lessons during language arts block
         1. Lesson 1: Introduction to the writing process and argumentative writing. Emphasis on brainstorming and developing first draft.
         2. Lesson 2: Introduction to revising, editing, and developing final draft.
         3. Lesson 3: Guided practice of the process; brainstorming, drafting, revising, editing, and final copy using argumentative prompt in science content area
         4. Lesson 4: Independent practice in using graphic organizer to answer argumentative prompt.
      2. Four practice lessons in science block
         1. Combination of science content and writing practice
         2. All lessons will be on the same topic (i.e. the sun) as in the experimental group.
            1. Lessons 1-4: Teacher introduces science topic. Reviews key vocabulary and connects to previous knowledge. Teacher reads a text (approximately 500 words) to students and reviews concepts in the text. Each text will provide new information or new perspectives about the topic.
            2. Argumentative Writing

Students will respond to an argumentative prompt after each lesson.

* 1. Argumentative Writing Post-Test
     + 1. Students will answer an argumentative prompt about the science topic.
       2. Students will use background knowledge to answer prompt
       3. Students will not be able to review to text during the lesson; however, the argumentative prompt will contain a brief summary (approximately 20-30 words) as support to answer the question.
  2. Content Post-Test
     + 1. Students will answer multiple choice and content interview questions about the content learned during the four content lessons.
  3. Strategy and writing post-interview
     + 1. Students will answer questions about what they think about their writing (while looking at their writing sample from post-test and pre-test) and answer questions about the strategy they used, how they think it helped their writing, what they liked and thought they could improve about their writing.
  4. Self-efficacy/Motivation Post Test

1. Maintenance
   1. Students will use the graphic organizer to respond to a prompt in social studies
2. Generalization
   1. Students will learn how to write without an argumentative essay without the use of the graphic organizer.
   2. Students will answer an argumentative prompt