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| --- | --- | --- | --- | --- | --- | --- | --- |
| **What do I need to know?** | **Sampling Decisions** | **Why do I need to know this?** | **What kind of data will answer the question?** | **Analysis methods** | **Potential Conclusions** | **Validity Threats** | **Methods to reduce validity threat.** |
| **What are the effects of computer based graphic organizers (CBGO) with embedded self-regulation supports on the expository writing of upper elementary students with learning disabilities, or struggling writers, in the science content area?** | Matched student pairs by a writing assessment and disability. Then randomly assigning one to control and one to treatment. This may help to have groups that are more equivalent.  | To know if CBGO can help students with disabilities structure essays in the science content area.To inform research on the use of graphic organizers for writing with students with disabilities.  | Student paragraphs collected during research. | Paragraphs will be scored based on a scoring matrix. Scores will be received for numbers of words, sentences, parts of paragraph, holistic writing quality, and accuracy of subject matter. Statistically compared to control group.  | Student use of the CBGO will increase the numbers of words written by students, number of sentences, and holistic quality.  | The students could have an increase in measures because they are writing in a controlled environment and being asked to write within a specific time frame, and not specifically because the use of the graphic organizer. Maturation | Have a control group similar to the treatment group on relevant existing measures, and have the control group write without the CBGO but under the same conditions. Short duration of intervention.  |
| **What are the effects of computer based graphic organizers (CBGO) with embedded self-regulation supports on student expository writing when used for writing in the social studies content area?****(generalization)** | Same sample | To know if students can use the CBGO in other content areas to successfully write expository essays.  | Student paragraphs collected in one other core content area. | Paragraphs will be scored based on a scoring matrix. Scores will be received for numbers of words, sentences, parts of paragraph, holistic writing quality, and accuracy of subject matter. Statistically compared to control group. Compared to science essays.  | The CBGO used in an additional content area will result in an increases in the dependent writing measures.  | MaturationStudents could have learned something in social studies that improves their essays which is not related to the intervention. | Short durationPre-test measures for writing in social studies |
| **What do I need to know?** |  | **Why do I need to know this?** | **What kind of data will answer the question?** | **Analysis methods** | **Potential Conclusions** | **Validity Threats** | **Methods to reduce validity threat.** |
| **What effects will repeated use of the CBGO have on the expository writing of these students when the students write independently without the graphic organizer?** | Same sample | Students cannot always rely on a graphic organizers for writing. If the students use it repeatedly, will the embedded strategies internalize so that the student has improved writing without the support. | Paragraphs written under controlled conditions without the use of the graphic organizers.  | Paragraphs scored with the same scoring matrix used. Compared between control and treatment. Also analyzed for differences in groups from using the CBGO and not. Statistical analysis.  | Writing without the CBGO under the same conditions will result in an improvement in writing, although possibly not as high as with the graphic organizer.  | Students could have an improvement because of repeated writing, or the scores could be low because the students are tired of writing.  | Limit the number of data collection sessions. Student interviews about their writing to find out if the students learned the structure of essays from the CBGO and applied the self-regulation skills to their independent writing.  |
| **What are student perceptions of writing before using the graphic organizer?** | A percentage of students (smaller sample) will be interviewed from control and treatment. | To inform the self-efficacy survey | Recorded interviews | CodingCategorizing | Students will not really know how to talk about their writing. Most will think that their writing is fine.  | Students not honestly talk about their writing.  | Have students to look at a sample of their writing (sample from pre-test possibly) and talk about it as looking at it.  |
| **What do I need to know?** |  | **Why do I need to know this?** | **What kind of data will answer the question?** | **Analysis methods** | **Potential Conclusions** | **Validity Threats** | **Methods to reduce validity threat.** |
| **What are student perceptions of their writing after using the graphic organizer?** | A percentage of students (smaller sample) will be interviewed from control and treatment. The same students from the interviews before the intervention starts.  | To inform the self-efficacy survey |  Recorded interviews | CodingCategorizing | Students will be able to talk about their writing more after using the CBGO. Will be able to identify parts of their writing and why it’s included.  | Students may respond how they think they researcher wants them to respond.  | Have students to look at a sample of their writing (post-test) and talk about it as they are looking at their writing.  Self-efficacy questionnaire (compare responses)  |
| **Is there a relationship between the use of the graphic organizer and the internalization of self-regulation strategies?** | A percentage of students (smaller sample) will be interviewed from control and treatment. Same students from previous interviews.  | To know if students learned how to apply self-regulation strategies to their writing. If they did, it may transfer to other classes and writing assignments. | Recorded interviews | CodingCategorizingCount of self-regulation words or phrases | Students will be able to talk about the self-regulation strategies and how it helped them to write their expository essays.  |  |  |
| **Does the use of CBGO increase student’s self-efficacy for writing?** | All students in both treatment and control groups. | To learn if students feel more confident and able in their writing. If confidence increased, it may help students to feel more confident in writing in other content areas.  | Self-efficacy questionnaire. Pre and post | Statistical analysis for an increase. Compare control and treatment groups. | Self-efficacy may increase after the students write with the CBGO. | Students with LD often have a high confidence in their ability. The self-efficacy questionnaire may have high scores for both groups in the pre-test.  | The interviews about how they feel about their writing can address self-efficacy. The results from the questionnaire can be compared to the interviews.  |

**Background of Research Study**

For the past year, I have been working on a federally funded research grant with faculty from the university. The purposes of this research grant is to help students with disabilities, or struggling writers, improve their essay writing with the use of technology. I co-developed a computer based graphic organizer with embedded self-regulation supports to help students write persuasive essays. The graphic organizer includes a mnemonic to help the students remember the parts of a persuasive essay, boxes for students to type in each part of their essay, and self-regulation supports including checklists, goal setting for the essay, roll over hints to give students supports, and a self-evaluation section. For my dissertation, I am planning to do a study about the CBGO with self-regulation supports, but modify the graphic organizer to help students write expository essays, possibly in the science content area. The purpose of this study is to help students to write essays with the graphic organizer to help them learn the structure of expository essays and self-regulation skills, so that eventually they will not have to rely on the support to write a quality essay. This study lends itself perfectly for mixed-methods because the effects of the intervention can be measured with experimental research, but the process of the student learning and applying the self-regulation skills and strategy is best for qualitative data.

**Intervention Components and Research Questions**

In the teaching phase, the students are taught the strategy, how it can help their writing, the parts of the graphic organizer and have independent practice time. After the students are taught and practice, they will write independently with the graphic organizer. For the control group, I am not sure if they should be taught the strategy, making the only difference between the lessons the use of the graphic organizer. Or possibly, I could have three groups; one getting instruction and writing with the graphic organizer, the second getting instruction on the strategy only and writing without any supports, and the third getting the traditional writing program at the school and writing. If I chose two or three groups, I would need to ensure that almost everything is the same, including instruction and writing time, with the main difference being the intervention. Before the intervention starts, I would like to have pre-test measures. After the teaching phase, I would like to have multiple post-test measures where the students are writing with the graphic organizer. Using the multiple measures, I would like to see the difference the CBGO made in the dependent writing measures. I am also interested if the student can maintain the successful use of the graphic organizer in an additional content area, and also if they can generalize the skills learned in independent writing without the graphic organizer. In addition, I want to interview the students before and after the intervention to understand the process of using the graphic organizer and how they felt it impacted their writing, and a self-efficacy questionnaire to understand if the student’s efficacy increased due to the intervention.

**Mixed Methods**

With this study, I want to learn if the graphic organizer is effective in helping students improve their essay writing in core content areas. I am also curious if after the teacher phase and with practice with the graphic organizer, if the students will have improved essay writing when they write essays without the graphic organizer. I am especially interested in if using the checklists and other supports with the graphic organizer will transfer to when they write without the graphic organizer. For example, if a student in the treatment group writes without the graphic organizer during maintenance, when they are interviewed, will they tell me that they looked over their work to see if they had the components in their writing that were in the checklist? I can learn if the graphic organizer improved student writing and if the students internalized the process is through the combination of both quantitative and qualitative methods.

I would like a sample of the students to talk about their writing before the start of the intervention as well as after the intervention. In the post-interview, I would like the students to look at their work samples and describe to me how they wrote and what helped their writing. I would also like these interviews to inform a self-efficacy questionnaire that I would give to all the participants in the study. In thinking about mixed-methods and developing this study, I was trying to think about how integrative I could make the qualitative and quantitative data.

 I wanted to integrate methods to learn about the process, to test theory, and to also inform parts of the study. In having interviews, the student reports will give information about the process of their writing as well as which parts of the graphic organizer impacted their writing. The interviews will help to inform the self-efficacy questionnaire, but also help me to check the results from the efficacy questionnaire. I will also be able to test theory. If I believe that the self-regulation supports in the graphic organizer were very helpful to student and that this is what caused the students to have improved writing, I could test this theory with the data obtained from student interviews. The interviews will also give me information about the overall process of writing with the graphic organizer, which is also important to understanding the overall effect of the CBGO on student writing. I will also be able to draw an overall conclusion of the effects of this graphic organizer on dependent measures, student self-efficacy, and the writing process.

**Conclusions**

After working on the grant for the past year with a single subject study using the graphic organizer, I have thought very hard on how to make it a mixed methods study and change it to group experimental instead of single subject. The class discussions, readings this semester have really helped me to understand what mixed methods is and how qualitative and quantitative can work together in a study to provide information about the variables as well as the process. Completing this activity really helped me to understand how I can combine qualitative and quantitative in this study to inform the various research questions. In writing my research questions and the data sources, I saw how I could use the data to inform other parts of the study, to test hypothesis and draw conclusions.