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The Transfer of Self-regulation and Self-monitoring from the Resource Room to the Science Classroom

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The Transfer of Self-regulation and Self-monitoring from the Resource Room to the Science Classroom.

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ABSTRACT

The purpose of this capstone project was to determine if assignment attack strategy skills learned in the resource room setting of a middle school would transfer into the general education classroom, and if on-task behavior would increase in the general education setting as a result of the resource room instruction. The project was framed with mixed method, multiple-case study design of self-regulation across multiple settings in a middle school. The elements of the assignment attack strategy skills for my study were committing to an assignment, preparing materials, proceeding, and sustaining attention. For the study, data collection included general education teacher surveys and observations in the science classroom for on-task behavior. The study used means and frequency counts of on-task behavior, to summarize and describe the data collected in the resource room and in the science classroom. In general, through learning how to self-monitor and self-regulate, the three students in the study improved their on-task behavior in the science classroom. Based on the results of this study, it seems special education teachers can teach assignment attack strategies and teach students how to self-monitor and self-regulate in the resource room in order to increase on-task behavior in other content classrooms. This is important because learning the strategies does not take up valuable content time in which content specific curriculum needs to be taught.

SECTION ONE

Introduction

At the middle school level, students are transitioning into an independent learning environment from a sheltered and supportive learning environment that typically exists in the elementary schools. Generally, in the middle school classroom, teachers expect students to be able to independently work and to continue to work independently on assigned tasks during the class (e.g., practice problems, projects, assignments). These assigned tasks, such as completing a set of practice problems, typically do not have many step-by-step directions, since the expectation for the middle level is for the student to manage the tasks on his or her own. One problem for classroom teachers in the middle grades, however, is that some students struggle with starting and staying focused on such in-class tasks and assignments. As an intervention specialist in the middle school, I know many who have individualized education plans indeed struggle with initiating and sustaining work during the class period, when faced with independent tasks.

Based on data from our school's National Report Card (2013), about 16 percent of students at my middle school have learning disabilities. At the middle school where I teach, general education teachers anecdotally state that they do not feel trained to support the students with learning disabilities. It is common that general education teachers, which I define as, content area teachers who teach science, math, social studies, and language arts, are serving the special education population without the support of an intervention specialist or aid in the classroom. An intervention specialist is a teacher that is trained to support the needs of students with disabilities.

THE TRANSFER OF SELF-REGULATION AND SELF-MONITORING FROM THE RESOURCE ROOM TO THE SCIENCE CLASSROOM

In my school, most students with learning disabilities have academic assistance in a resource room every other day. The intervention specialist provides direct instruction to inform Individual Education Plan (IEP) goals and supports students with academic work. As an intervention specialist, I see 23 students every other school day, my time with them is limited. The students spend more time in the general education classrooms than they do with intervention specialists. These students are with the general education population for core courses such as math, social studies, science, and language arts.

In my experience, students with disabilities that are served in the general education classroom, struggle to attend to lessons, initiate independent work, and produce independent assignments, when time is provided during the class period to practice, complete assignments, and make progress on projects. It is vital that students in the general education classroom are able to transition from teacher-led class work to independent work. In order to make the transition, students need to have and be able to use a metacognitive tool referred to as self-regulation and self-monitoring to stay on track to complete lessons and assignments in a timely fashion.

Research shows that students who struggle academically often report lower metacognitive strategy use and a lower perceived ability to self-regulate their learning compared to average peers (Klassen, Krawchuk, & Rajani, 2008). I define self-regulation as the ability to control one's behaviors to follow the teacher's expectations. In a study by Ness and Sohlberg (2013), a self-regulation strategy, labeled as an assignment attack strategy, was taught in a resource rooms to evaluate the effects of assignment initiation, engagement, and behavior in the resource room setting. The study used a mixed method

design to determine if the self-regulation skills transferred to the general education classroom, but the researchers used a method that was ineffective. For example, the researchers calculated the student's assignment completion rate in the general education classroom before and after the self-regulation study by checking the students grades before the study and after. The generalized rate of assignment completion was minimal in their findings.

The purpose of this capstone project was to determine if assignment attack strategy skills learned in the resource room setting transferred into the general education classroom. For this study, an assignment attack strategy included, strategies to initiate work independently and strategies to sustain work for the expected period of time. The elements of the assignment attack strategy skills for my study were committing to an assignment, preparing materials, proceeding, and sustaining. Ideally, when appropriately applying assignment attack strategies, a student would independently prepare themselves to start a task or assignment and work through the expected duration of time without external support in the general education classroom. A secondary goal was to determine whether on-task behaviors increased in the general education science classroom. I defined on-task behavior as attending to teacher directions, and physically working on the assignment at hand.

The research questions that framed the study were:

1. Are middle grades students with IEPs able to acquire assignment attack strategy skills in a resource room setting?

2. Does teaching the assignment attack strategy in the resource room setting improve the quality of independent work and increase on-task behavior in a general education classroom?

The results from this project may support resource room teachers with a strategy to teach to improve students' self- regulatory assignment attack abilities. Students could use these strategies to be more successful and independent in the general education classroom. Content teachers would greatly benefit from all their students using a method to help them commit to an assignment, prepare materials, proceed or continue independent work, and sustain focus throughout the class period. This study is significant because if resource room students could transfer the self-regulatory strategy attack skills into the general education classroom, they would be more successful in starting assignments independently and sustaining attention to assignments. The importance of on-task, independent work is that students can demonstrate what they know about the content when they work independently. If a student struggles to be on-task and focus on an assigned task, it is likely that they will not complete the task and this can influence their overall achievement in the class. Likewise, the results of this study can empower students to use self-regulatory and self-monitoring strategies to be successful independently in the general education classroom.

SECTION TWO

Literature Review

Special Education Inclusion in the General Education Classroom

Students with disabilities are placed in educational settings with typically developing peers to the greatest extent possible. In 1975, PL 94-142 was passed which mandated that students with disabilities were served in the least restrictive environment with a free and appropriate education (Osgood, 2005). Current legislation states that students with disabilities must be educated in the least restrictive environment (LRE). If the content in the general educational setting is too difficult, it can be modified or accommodations can be made to assist the student to be successful. Additionally, an intervention specialist may team teach with the general education teacher or a instructional aide can assist in the general education classroom as an inclusive approach to providing the LRE. With the many students with IEPs and the multiple ways to provide the LRE, schools encourage most students with disabilities to be educated in the general education setting with support from the intervention specialists.

The number of students with disabilities that are being served in the general education classroom is continually increasing (Winn & Blanton, 2005). According to the U.S. Department of Education (2011), most students with disabilities spend the majority of their day in the general education classroom. More specifically, according to the 31st Annual Report to Congress on the implementation of the Individuals with Disabilities Act

(2009), at least 57% of students spend at least 80% of the school day in the general education classroom and only about five percent of students with special needs learn in a small group setting for a full day. A model of instruction that supports the education of students with disabilities in general education settings is known as inclusion.

Inclusion is a full-team effort that takes collaboration and careful planning between the general education teachers, special education teachers, school psychologists, and other school professionals. General education teachers have the challenging task of accommodating students with disabilities in their classrooms without necessarily having the same kind of training that intervention specialists have. General education teachers must know specialized strategies and interventions to reach a diverse group of student needs, and while many do have a repertoire of strategies to support diverse learners, many general education teachers report they do not feel prepared to meet the diverse needs of students with disabilities (Boyer & Mainzer 2003; Hodgson, Lazarus, Thurlow 2011).

According to a survey conducted in 2004 in southeastern United States of elementary and middle school teachers, the majority of teachers were worried about inclusion in the general education classroom (Clampit, Hollifield, & Nichols, 2004). The main concerns included workload, litigation, implementation of inclusion policies and practices, and the quality of the environment for general education students. These teachers specialize in a content specific academic subjects and have little to no training in teaching students with special needs. The implications of this are that some students with special needs are not successful independently in the general education class and need

support to help them be more successful. This is challenging for general education teachers because they do not have extra time to teach skills such as metacognition that are not a part of the content specific curriculum.

Metacognition

Inclusion in the middle grades poses especially tough challenges for the general education teachers who support students with disabilities. Inclusion is difficult in regards to students with IEPs who are expected to do independent work in the classroom. The reason is because some students with IEPs lack self-regulation skills. Again, I define self-regulation as the ability to control one's behaviors to follow the teacher's expectations. Many learners with IEPs struggle with independent work in the classroom, and this is related to self-regulation, which is a component of metacognition. Metacognition is a broad area of cognitive science that explains how learners think about thinking. Flavell (1979), defined the term metacognition, "One's knowledge concerning one's own cognitive processes or anything related to them" (p.232). He also categorized the term into two separate processes, metacognitive knowledge and metacognitive regulation (Flavell, 1979). Metacognitive skills help a student recognize when they are stuck and then actively problem solve to help them get back on track. Students who struggle in the general education classroom often have limited metacognitive awareness, which results in an inability to self-regulate, and this often leads to frustration, avoidance of the teacher, and confidence to complete independent work.

Theoretically, metacognition is related to Bandura's (1989) social cognitive theory. Social cognitive theory states that people are motivated to change their behavior to problem solve when there are external forces or demands in their environment such as the classroom. If a student is aware of a problem or situation they encounter in the classroom, they can shape their behavior and thinking to problem solve. This relates to metacognition because knowledge and thinking skills are necessary to determine the need to initiate a task and sustain attention even when challenging problem solving is involved. Students who are able to think about and control their motivation and behavior can see positive influences in the classroom. Students can learn to be capable of thinking about their behaviors and about the steps of learning.

Metacognitive skills have been a focus of empirical studies for many years and in general, studies conclude that metacognitive skills can be taught to students in order to help them be more successful in the classroom. In Mevarech and Amrany (2008), metacognitive skills were taught to a group of high school math students. The study sought to explore if students who receive metacognition instruction implement metacognitive processes independently in math tasks, earn higher math achievement scores, and became more aware of metacognitive skills. The participants in the study were 61 Israeli high school students enrolled in a math course. The participants were split into two groups, one group received metacognitive instruction and the other did not. The treatment group was taught to self-question and explain each step of their work during daily math lessons. The mathematics unit was taught for a month and a summative assessment was administered two months after the treatment. The results

show that students who were assigned to the meta-cognitive instruction executed different kinds of metacognitive processes and outperformed the students in the control group when taking the summative mathematics exam (Mevarech & Amrany, 2008). Over 70% of the treatment group was able to explain their reasoning and procedures for solving math problems on the exam (Mevarech & Amrany, 2008). The data show that the metacognitive instruction was an effective way to increase math achievement and teach metacognitive regulation.

Likewise, this study addressed the question of whether metacognitive regulatory skills and knowledge can be transferred to a situation that is different than what was practiced during instruction. Heward (2006) defines transfer and generalization synonymously as using new knowledge and skills in settings that are different from where the student learned the skill. In this case, the students who received the math instruction were able to apply the skills they learned on a math exam two months after the study. The implications of this study are that teachers can teach metacognitive regulatory skills with systematic and explicit instruction. This instruction can be used to increase math achievement and metacognitive regulation. This is important because students are more successful when they can regulate their cognition and apply metacognitive strategies.

Metacognition involves self-regulation when a person determines a task and monitors attention to the task at hand (Flavell, 1979). Students are presented with challenging assignments that require the metacognitive skills such as self-regulation to be

successful in the classroom. It is important that students can learn these skills to help them be better learners.

Self- Regulation

Metacognition comprises many components, such as thinking about the assigned task and self-regulating behaviors and thoughts. Winne (2001) argues that self-regulated learning is an important part of metacognition because it helps a student identify when they are struggling. The student can then determine an effective strategy to use in order to continue working and learning.

Students benefit from self-regulation skills; however, some students need explicit instruction on how to use self-regulation strategies in the classroom. In Zimmerman and Martinez-Pons (1990), high-achieving students used more self-regulatory skills than low-achieving students. Low-achieving students may benefit from self-regulatory strategy and skill instruction by learning the skills explicitly through modeling and scaffolding from a teacher (Lajoie & Azevedo 2006). When a teacher models a skill, they demonstrate how the students will use the skill in a variety of situations. Research illustrates that teacher scaffolding can help students to actively think about and relate to the material (Frederick, Courtney, & Coniglia, 2014). When a teacher scaffolds, they teach a skill in steps and over time reduce support until the student can demonstrate the skill independently. Self-regulation is an important skill to scaffold because when a student can self-regulate independently, they require less assistance in the classroom,

work in a more focused way, concentrate on completing tasks, and likely gain opportunities for practice, review, and learning as a result.

Self-regulatory skills are useful in special education and general education classrooms to help students increase motivation and independent time on-task (McDougall, 1998). Special education teachers are trained to teach self-regulatory skills by using modeling and scaffolded support. Therefore, the instruction of self-regulation strategies could help the students to learn how to manage, regulate, and monitor their learning independently. Not all students have the same self-regulation ability and require instruction to learn strategies for self-regulatory skills. Students with disabilities who learn self- regulatory skills learn to control their own behaviors. One example of a self-regulation strategy is the use of a checklist. Students can independently refer to a checklist to remind them of the steps in a process and then record if they were able to execute that skill.

In the classroom, students are expected to be able to access their working memory to process many forms of information. Self-regulatory skills can help activate working memory to help students navigate difficult tasks (Azevado & Witherspoon 2009). Likewise, students who use self-regulation manage their learning, are more intrinsically motivated, and use more metacognitive control (Zimmerman, 2001).

Research states that students with low academic success have a lower level of motivational strategies and use fewer learning strategies (Onemli, Mehmet, Yondem & Zeynep 2012). Training students to use metacognitive processes such as thinking about

planning, monitoring behavior, and regulating behavior is an effective way to teach motivation and increase academic success.

Teaching Self-Regulation Strategies

Self-regulation can be taught in the context of a resource room. A resource room is typically a class period for students with special needs. In a resource room class, the students receive help with homework, learn strategies to help in their areas with deficiencies, and the special education teacher can address the needs of the student per their IEPs. Experimental studies show that students can learn self-regulation skills.

Seventeen teachers and 219 children participated in a five week self-regulation study in math classrooms (Stoegler & Ziegler, 2008). The control group did not have the self-regulation training intervention but followed the same math curriculum. The remaining seven teachers and 115 children had a 25 day training period in which the teachers taught the self-regulation topics. In the first week the teachers focused on teaching self-evaluation and monitoring. The students were assigned ten homework problems per night and a quiz at the end of each week. At the end of the first week, the students took a quiz and then started the goal setting and strategic planning phase. For the remaining four weeks of the study, the students participated in conferences with their teacher to discuss effective and ineffective strategies to attain their goal. The students took a pre and post attitude and interest surveys and pre and post math assessments. The students completed time management self-reflection checklists during homework assignments.

The effectiveness of the self-regulated training program was examined by analyzing student variables such as time management, self-regulation, motivation, and performance rates in math. Results illustrate that after the training, the students that were in the control group reported that their management skills improved and self-reflection of their own learning improved throughout the five weeks. Additionally, helplessness decreased, self-regulatory skills increased, motivation increased, and the willingness to exert effort increased. The intervention group's math scores did not improve over the five week period but the control group's scores actually decreased, they did not receive the treatment. The implications of this finding suggest that self-regulation affects many different variables in a classroom in a positive way, not including math test scores.

Self-regulatory skills can be explicitly taught to students based on results from an experimental design study. Onemli et al. (2012), examined tenth grade students who took part in an eight week psychoeducational group. The aim of this study was to determine the effect of a psychoeducational group study, regarding self-regulation strategies on motivational beliefs and academic success of students using an experimental design. Pre and post-tests with control group design were used in this study. Results show a significant increase of motivational beliefs and academic success.

Ness and Sohlberg (2013) concluded that a self-regulatory assignment attack strategy was effective as shown by a large change (.75 Phi) in growth of assignment attack processes and teacher reports. These findings indicate that positive academic behaviors increased after the assignment attack instruction (Ness & Sohlberg 2013). In this study, a special education teacher delivered effective instruction of strategies to

improve self-regulation and assignment attack to students within the context of a resource room setting. The students were able to apply learned strategies independently without teacher prompting or support after the instruction phase. Although promising, limited data was collected to be able to determine if the taught assignment attack strategy had any impact in the general education classroom. The authors mention that further research is necessary to investigate the extent to which this self-regulatory strategy can be generalized into the general education setting. General education teachers would benefit if students with disabilities had a strategy to use to help them monitor and control the steps in an assignment. As a result, the implications of this finding suggest that lower performing students; that is, students who tend to have disabilities are capable of learning a self-regulatory assignment attack skills and use it independently in the setting in which they learned it. The results show that teaching classroom based self-regulatory strategies can help students in resource room settings (Ness & Sohlberg 2013).

Self-Monitoring

A strategy that can be used to supplement self-regulation is self-monitoring, which for the current study involves the ability to physically note one's behavior by recording it. In order for students to self-regulate and think about how they behave in the classroom, they can use self-monitoring to identify areas of need and monitor their progress. In self-monitoring, students determine whether they are engaging in the target behavior and then record the behavior (Nelson & Hayes, 1981). Self-monitoring has been researched extensively to indicate that it improves attention, academic productivity,

and that students who self-monitor display fewer off-task behaviors (Shapiro & Cole, 1994).

Research has shown that self-monitoring can be learned by students with and without disabilities to help regulate their behavior and become a more active, independent student (Shapiro & Cole, 1994). Not all students automatically know how to self-monitor and this skill can be taught to students so that they can self-monitor in the classroom setting. Students who self-monitor are able to rely less on parents and teachers when doing independent work and these skills can be generalized to untrained settings (McLaughlin, Krappman, & Gorman, 1991). This is important because in inclusive general education settings there can be as many as 30 students to one teacher. Therefore, it is vital that students have strategies and skills to help them work and learn as independently in the classroom as possible.

Students who display on-task behaviors in the classroom, are able to work more independently. Lloyd and Hilliard (1989) suggest that self-monitoring strategies be taught using modeling and direct instruction and they can influence the amount of on-task behaviors students exhibit in class. The students in this study included 12 elementary students with disabilities who used a card to monitor their on-task and off-task behavior. The design included an auditory tone during class to prompt students to self-monitor. The results of this study indicated that off-task behavior decreased during the intervention phase, in which the self-monitoring strategy was implemented. The implications of this finding suggests that self-monitoring is a useful strategy to decrease off-task behavior for students with special needs in the classroom setting.

Again, the connection between self-monitoring and self-regulation is that self-monitoring is actively recognizing a behavior and self-regulating is controlling which behaviors need to occur. Self-monitoring is one of the first steps to self-regulated behavior. Students who are involved in the monitoring of their behavior can see if their behavior has changed; this is often motivating for students and helps them set goals.

Conclusion

In summary, metacognition, self-monitoring, and self-regulation are crucial aspects in the academic independence and success of our students. Although students with special needs struggle in the classroom due in part to a lack of metacognitive skills and strategies, we know that teachers deliver the instruction of strategies and skills to increase on-task, independent classroom behavior. It is important that students know they are capable of thinking about their behavior and their learning. Self-monitoring and self-regulation are not skills that all students innately have, and many students need to learn strategies to help them be more aware of metacognitive strategies. Special education teachers can model and scaffold support to teach these skills in a resource room classroom. Extensive research shows that self-monitoring and self-regulation improve attention, academic productivity, and that students who self-monitor display fewer off-task behaviors. Students who learn metacognitive awareness and regulation will benefit in many ways, so the goal of the study is to see if the metacognitive strategies learned in the resource room will transfer to the general education classroom.

SECTION THREE

Methodology

Setting and Materials

This study took place in a middle school in a large, Midwestern, suburban school district during the 2015-2016 school year. The school district is economically and culturally diverse, covering 52 square miles. The district is the 11th largest in the state of Ohio. The middle school is one of four in the district and services 903 students. Of the school population, 143 or 15.9%, are identified as students with disabilities.

The intervention for this project occurred during the students' supplemental study hall which takes place during the last period of the school day, every other day. This means that one week I see students two days and the next week I see them three days of the week. Supplemental study hall is a class of eight students with IEPs. In supplemental study hall, students are expected to work toward IEP goals with an intervention specialist. When the students are not working on IEP goals, they are expected to work on homework with the assistance of the intervention specialist, when needed. As the intervention specialist in supplemental study hall, I provide direct instruction with students in small groups on areas of academic deficiencies with students in small groups and rotate throughout the period to work with students individually and in small groups.

Baseline data, weekly benchmark data, and end of study longevity data were collected in a general education science classroom of 24 students. In the general education science classroom, students are expected to follow verbal and written directions and complete independent work. Middle school students are expected to have resources and materials ready, independently, and be able to work independently for the expected duration of time that the teacher determines, with minimal to no prompting. In the science classroom, I collected data as an observer in the classroom for the three participants in my study, but I did not provide any instruction in this setting.

Participants

Christian, Michael, and April (pseudonyms) are seventh grade students who are enrolled in special education. These students receive special education support services with team teaching services for academic areas of need and intervention in small group supplemental study halls for areas of academic deficiencies. Christian is a 12-year-old male who has lived in the same school district his whole life. Christian qualified for special education services under the category of Other Health Impairments (OHI) in the areas of spelling and reading comprehension. He has a medical diagnosis of Attention Deficit Hyperactive Disorder (ADHD). During my study, Christian was re-evaluated for services and did not re-qualify for special education services. Based on the current assessment results, Christian exhibits average intellectual skill with commensurate academic skills. His only area of difficulty is starting and completing work. This negatively impacts his classroom grades; however, his norm-referenced academic

assessments and his nationally normed assessment results indicate that his rate of learning is within the average range and that he is capable of performing comparably to same age peers. Since the Individualized Educational Plan (IEP) team agreed that Christians' executive functioning concerns are negatively impacting his grades, the team agreed that he met the eligibility of Other Health Impairment, but the team also agreed that he does not require specially designed instruction. Christian has a grade point average (GPA) of 1.81. He struggles to find, start, and complete work, which negatively affects his grades in all classes. Based on classroom observations, Christian often appears to be distracted by his peers and other objects, and he struggles to focus on the task at hand and needs frequent verbal prompting to participate. His mother and the IEP team agreed that although he no longer qualifies for special education services, he may benefit from learning metacognitive skills as a participant in this study.

Michael is a 13-year-old male who moved into the district from another suburban district before sixth grade. He qualifies for Special Education as a child with a Specific Learning Disability (SLD) in the areas of oral expression, listening comprehension, and reading comprehension based on discrepancies between reading decoding and reading comprehension; discrepancies between reading decoding and reading fluency; perceptual and spatial reasoning problems, and expressive and receptive language delays. Michael has made reading and language progress over the years with intervention, but skills are still delayed. Observations from the school psychologist state that Mike is capable of following general classroom directives and routines, but sometimes requires an individual redirection to remain focused and complete work.

April is a 13-year-old female who has attended school in the same school district for all grade levels. Based on Evaluation Team Results' (ETR) current assessment analysis, April presents with low cognition and commensurate adaptive skills in the home setting and school setting. Academically, she has a personal strength in the area of reading comprehension. Her decoding ability, writing skill with writing to a prompt, and solving math reasoning and math calculation skills were normative weaknesses. In addition, April struggles with social-emotional behaviors (peer relations, maintaining her focus, and defiance/aggression, which has a greater impact on her in the regular education setting and at home) and communication (language and articulation). As a result of this, April meets the eligibility criteria of Intellectual Disability (ID) and requires specially designed instruction. "Intellectual disability" (mental retardation) means significantly subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child's educational performance.

Research Design

A multiple case-study design was utilized to examine the effects of teaching a self-regulation assignment attack strategy in a supplemental study hall. The purpose of the study was to determine whether the skills transferred to the general education classroom, and if students do take up the skills and use them in other classes, the extent to which this happened. Case study research in educational settings fosters an in-depth analysis of an individual or a small group of people within a school in order to understand

the phenomenon of the assignment attack strategy in rich detail (Mertler & Charles, 2011). A multiple case study is used when there is more than a single individual serving as the focus of the investigation. I chose this method of design because my study sought to determine if the use of an assignment attack strategy and metacognitive training resulted in an increase in on-task behavior for just three students. A focused report of the outcomes with few participants is the ultimate goal of this methodology. My research is designed to determine if the progress made in the resource room with assignment attack strategies would take effect in a different school setting, and if the strategy would continue after intervention short-term (one week), mid-term (three weeks), and long-term (five weeks).

Procedures

Baseline phase. Observation baseline data were collected in the general education science classroom. The baseline observations took place during the first period class over three consecutive days. The students' on-task behavior was assessed using a three minute whole interval recording system. For this study, I define on-task behavior as engaging in expected assignments or attending to the appropriate person. On-task behavior was similarly defined in a research study which evaluated if self-monitoring or self-monitoring plus reinforcement was more effective for increasing on-task behavior (Davis, Dacus, Bankhead, Haupert, Fuentes, Zoch & Lang 2014.) For example, if the teacher was addressing the class, an on-task student would be looking at the teacher. At the end of each session, I calculated the percentage of intervals that each student was on-

task. A structured data collection form was utilized to record whether or not each student was on-task each third minute (Appendix E).

Phase one - intervention. Phase one consisted of the initial instruction of the assignment attack strategy in the resource room. The instruction was conducted three days a week in the resource room setting, for a total of five instructional sessions. On day one, I taught the three case study students the four steps of assignment attack. The four steps were visually located on their desks as a laminated card (Appendix B), which reinforced their learning. The assignment attack approach is a research based strategy that was used in a study by Ness and Sohlberg (2013). Ness and Sohlberg (2013) did not specify the procedure in which they taught the assignment attack method. Therefore, I designed instruction from research based methods for teaching self-monitoring and self-regulation (Lloyd & Hilliard, 1989). I introduced each of the four steps with direct instruction, modeling for the students what each looked like, explaining directly what each step meant, and guiding practice and discussion of each of the steps (Lloyd & Hilliard, 1989). Students continued to practice the four steps of self-regulation by using the laminated checklist on their desk, to monitor if they were meeting the four criteria of the assignment attack strategy.

Additionally, I used a self-assessment strategy to engage students in reflection of their learning and understanding of the four steps of the assignment attack strategy. In a study by Mahlberg (2015), students who were in classes with a component of self-assessment and self-regulation used self-regulation more than students in traditional classes. This research supports the value of self-assessment to support self-regulation in

the classroom. The self-assessment asked if the student had their assignment ready, had all tools and resources ready, if they initiated work independently, and if they worked for the entire duration they were expected (Appendix C). The purpose of these surveys was to see if students were aware if they were or were not completing the four step assignment attack strategy. When the students left class, I completed the same four questions and compared my score with the students' self-assessment scores as a way to ensure the intervention was focused on learning and to strengthen the quality of the intervention phase.

In the next supplemental study hall, I had a conference with each student to discuss the differences in the results of their self-assessments and the assessments I completed for each of them. We discussed why my scores were different from theirs so that they could score themselves more accurately in future classes (i.e., for reliability) and to reinforce their understanding in clear ways of the four steps of the strategy. When the three students' self-assessments were within one point of the assessment I completed for them, I considered them ready for the additional components in phase two.

Phase two - intervention with self-monitoring. During the second session of the intervention, which lasted three days, after the students had learned the steps of the assignment attack strategy and learned how to complete the self-assessment tool, I taught the students how to self-monitor, recording if they were on-task every three minutes during a class period. For example, during a class period, I verbally announced that it was time to record their assignment attack behavior, and I did so every three minutes of the class for a total of 18 times. Simultaneously, I recorded on-task behavior every three

minutes as well. I conducted conferences with each student after the class period to compare my average on-task rate with the rate they recorded for themselves. I determined students were accurately using the recording sheet when, after a period of two instructional days, students' scores on the recording sheet matched my own scores. These data were useful to show me when the students had learned to accurately self-monitor and self-assess their on-task, assignment attack behaviors.

Phase three - intervention with simultaneous observations in the general science class. After one week of instruction in supplemental study hall, I completed the first observation in the general education setting to see if the instruction made an impact on the students' on-task behavior. In the general education science classroom, I monitored on-task behavior, observing from the back of the classroom. Every three minutes, I recorded their behavior on a recording sheet that measures the use of the four steps of the assignment attack strategy (Appendix E). I consistently collected frequency counts every three minutes for on-task behavior. Observing behaviors in the science class informed my thinking about the kinds of instruction I would need to use in the supplemental class to make sure students had learned completely the assignment attack strategy. We continued the self-regulation and self-monitoring interventions in supplemental study hall for a second week. I completed a second observation after the second week of instruction. I ended phase three when the students had increased on-task behavior to at least 75% for two consecutive weeks based on data collected in the general science classroom.

Phase four- observations in the science class. In the fourth phase, I did not teach the assignment attack strategy in the resource room and monitored data collection in the general education setting to see if the skills had completely transferred; that is, the students used the skills without prompting in the science class without the reinforcement in the supplemental class. Additionally, I had a teaching colleague complete observation four in the science classroom after one week without the supplemental class to collect on-task data every three minutes for one class period to control the variable of my physical presence in the science classroom. I prepared the teacher to make accurate observations through sharing a completed observation form and explaining what each student was doing if I marked them as off-task. Additionally, I told the teacher the definition for on-task behavior and off-task behavior. If I was physically located in the science class, the students might be reminded of the strategy through my presence and therefore confound the observation of transfer. I trained my colleague to use the recording document.

Phase five - longitudinal data collection. I continued to collect observation data, for five weeks after intervention in the science classroom for on-task behavior every three minutes to test the longevity of the results. The short term measure was taken one week without intervention (observation four), the mid-term measure was taken three weeks after intervention was terminated (observation five), and the long-term longevity measure was taken five weeks after the end of intervention (observation six).

Data Collection

Teacher Survey. Prior to collecting baseline data, I asked the science teacher to complete a survey in order to better understand how the three students in my study

performed in relation to independent work in the science classroom. This teacher had no part in the assignment attack intervention that was taught in the resource room. In general, this survey was an informal tool to determine whether the science teacher noticed issues with and eventual changes with on-task behavior following the intervention period.

The survey design included four components; assignment in front of student, materials ready, initiate assignment, and sustain work for expected period of time. For each component the teacher reflected in her perspective, if the student was independent (three points), needed one prompt (two points), needed more than one prompt (one point), or never displayed the particular component of assignment attack (zero points). The scores were then added up to a total of twelve points for each student and an average score was taken to compute a percentage. In summary, the surveys were a kind of credibility check for my own observations of the students, during the period of intervention and during follow-up phases to the intervention.

Assignment attack written documents. The students in the study filled out an assignment attack recording sheet every three minutes in the resource room setting during intervention (see Appendix A.) The students were trained to record if they were displaying on-task behavior. I used teacher modeling and student modeling to demonstrate on-task behavior. The class practiced filling out a recording sheet as I role played and then we checked for accuracy discussing why some behaviors were on-task. At the end of the instructional period of independent recording, the student and I calculated an average of how many of the intervals they were on-task.

At the end of each instructional class period in the resource room, each student completed a self-assessment on the four components of the assignment attack strategy. For each component, the students reflected if they completed each component independently, with reminders, or not at all. The self-assessment tool is located in Appendix C.

Observations and notes. I observed a total of six, 54 minute sessions in the science classroom. As an observer, I would stand or sit in the back of the room and walk around the room if my vision of a student was indirect. Every third minute, on the minute I would visually notice if each of the three students were engaging in the on-task or target behavior. For example, if the science teacher was at the board explaining a topic, an on-task student would be looking at her. If the student was expected to be reading and writing notes, I would observe if the student was attending to the expected work. The notes I collected were descriptions of the assignments, distractions, and unusual circumstances in the classroom. The recording sheet and notes were gathered for a total of six recording sheets with observational notes.

Data Analysis

I used descriptive statistics, such as means and frequency counts, to summarize and describe the data I collected in the resource room and in the science classroom. The patterns in the data helped me to determine when to end each phase of the intervention. I observed patterns in average rates of on-task behavior and frequency counts for on-task behavior. I reviewed anecdotal notes throughout the study to identify patterns and

evaluate limitations in the study. After consulting with a mathematics professor at in the math department at Otterbein University, I ran a paired t-test on the baseline and post intervention scores of on-task behavior. I chose to exclude the student April as an outlier in my statistical analysis because she scored so high during the baseline observations and continued to score very high in post-intervention observations.

SECTION FOUR

Results

Results related to baseline data, weekly benchmark data during intervention, and end of study longevity data comprise the focus of this section. This section is organized with results that follow each phase of the study. The reason I chose to organize the results in this way is to capture student progress, which is an important way to think about replicating the procedure in the future. In general, through learning how to self-monitor and self-regulate, the three students in my study improved their rate of on-task behavior in the science classroom. Again, the purpose of this project was to determine whether an assignment attack strategy that is learned in the resource room transfers to the science classroom for three students with IEPs.

The transfer and maintenance of the assignment attack skills

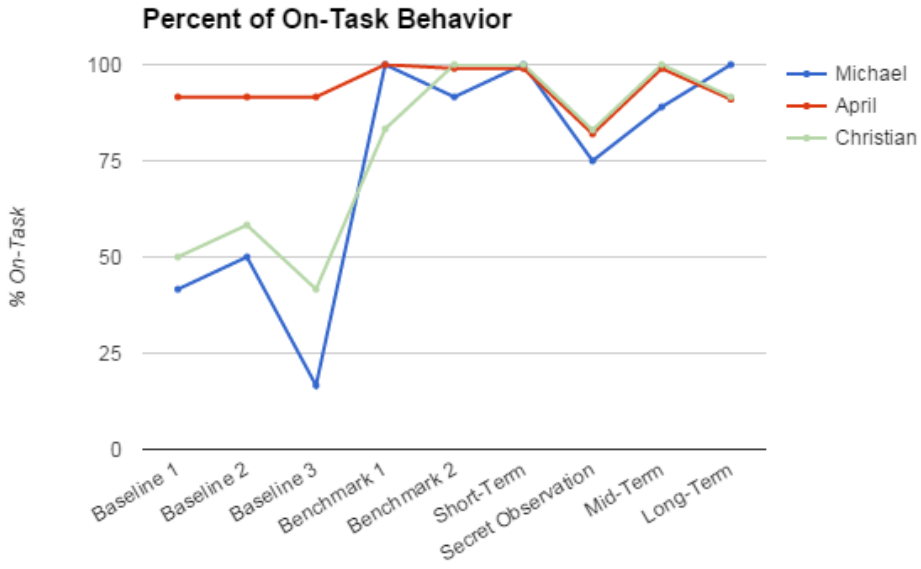


Figure 1. Percent of on-task behavior over the entire duration of the study

The results indicate the three students were able to internalize the assignment attack strategy learned in the resource room and use the strategy in the science classroom as evident from the increase in on-task behavior (Figure 1). Through learning how to self-monitor in the resource room classroom, the students in my study were able to evaluate their behavior accurately and increase on-task behavior in order to be more efficient and independent in the science classroom (Figure 1). Students were able to maintain the benefits of the assignment attack strategy over the duration of the study. For example, in the case of Christian, he was observed three times during the baseline phase, had a steady improvement for on-task behavior from benchmark through post intervention observations. This indicates that following instruction, Christian was able to learn how to self-monitor and self-regulate and apply these strategies to be more on task in the science classroom. This finding is in line with the results of Smith (2002), which determined that students with learning disabilities indeed learn self-monitoring strategies when explicitly taught. In fact, Smith (2002) indicated two teachers in different schools taught self-monitoring strategies during math, language arts, and reading class and were successful at increasing students' on-task behaviors in each of the classes. The unique element here is the idea that middle school students with disabilities are able to learn the strategy and "take it with them," internalizing the self-monitoring strategies and using them in other classrooms.

In Ness and Sohlberg (2013), the participants were able to apply learned strategies independently without teacher prompting or support after the instruction phase and results showed that even after the instruction phase, the behavior was maintained. The

results of the current study are similar in that students were able to take the strategies and apply them to the science setting for a five-week time span after intervention. The students were able to maintain increased rates of on-task behavior showing transfer and maintenance of the skill.

In addition Shapiro and Cole (1994), concluded that students who self-monitored displayed less off task behaviors. In my study, I saw similar results over a five week time-span. The three students in my study were more on-task in the science classroom after learning the assignment attack strategy which included components of self-monitoring. However, Shapiro and Cole's results were for students without disabilities (Shapiro & Cole 1994). My study involved three students with learning disabilities. The results of my study suggest similar findings with Shapiro and Cole's findings that students can learn self-monitoring skills and that this skill decreases off-task behavior in the classroom. Therefore, it can be argued that learning self-monitoring skills decreases off-task behavior for all students, with or without disabilities.

Observation four was a "secret observation" conducted by a colleague. The reason I used this covert observation was because I wondered whether my physical presence in the resource room during instruction and in the science classroom, when I was collecting observational data, influenced the students' on-task behaviors and I wanted to see if natural behavior in the research setting was different than my overt observation (Li, 2008). To address this concern, I asked a teaching colleague to conduct a secret observation, and I was confident his presence would not interfere, since the three students are familiar with this teacher as being present in many of their classes for

support. I trained the teacher on how to collect momentary time sampling behavior for on-task behaviors in the general education science classroom. The secret observation data was slightly below the levels of on-task behavior that I had recorded, when I was present in the classroom. However, the difference in on-task behavior was no more than two frequency data points from my observations. For example, when I was present for a post intervention observation, Christian was on-task for 100% (12 out of 12) of the three minute intervals. During the secret observation, Christian was observed on task in 83%, (10 out of 12) of the three minute intervals. Although there was a difference when I was in the classroom, the students' on-task frequency was still higher than pre-intervention data. In comparison, during pre-intervention Christian was observed on task in six out of 12 intervals, five out of 12 intervals, and seven out of 12 intervals. This demonstrates that although there was a difference when post-observation data was collected by a teaching colleague, the students' data still reflect that even with a stranger in the classroom, there were more on-task behaviors observed than in the pre-intervention observations.

Baseline data. Baseline data illustrated that two of the three students in my study were off-task for more than 50% of class time in the science classroom (Table 1). During the baseline phase, three science class sessions were observed. A typical science class was taught by the general education teacher with no extra prompting or interventions. On-task frequency baseline data was collected every three minutes for 12 consecutive measurements. I calculated an average for each student's on-task behavior for the three

baseline sessions. Michael's average on-task score during baseline was 36.07%, April's was 91.6%, and Christian's was 49.97%.

Table 1. Baseline data collected for on-task behavior in the science classroom

	Baseline 1	% On-Task	Baseline 2	% On-Task	Baseline3	% On-Task	Average % On-Task
Michael	5/12	41.6%	6/12	50%	2/12	16.6%	36.07%
April	11/12	91.6%	11/12	91.6%	11/12	91.6%	91.6%
Christian	6/12	50%	7/12	58.3%	5/12	41.6%	49.97%

Benchmark observations following interventions. Benchmark observational data showed a dramatic improvement of on-task behavior for all three students after one week of intervention or instruction with the assignment attack strategy. The data in table two are from benchmark observations that were taken in the general education classroom at the end of each week of intervention. For the first benchmark observation, Michael's on-task rate increased to 100%, April's was 100%, and Christian's on-task rate was 83.3%. For the second benchmark observation, Michael's on-task rate was 91.6%, April's was 100%, and Christian's was 100%. It is important to note that each three-minute interval was about eight percent of the total class time, which means Michael exhibited off-task behavior for one interval of the total class time.

Table 2. Observation one and two: benchmark data during the intervention phase

	Observation One	% On-Task	Observation Two	% On-Task
Michael	12/12	100%	11/12	91.6%
April	12/12	100%	12/12	100%
Christian	10/12	83.3%	12/12	100%

Observations of on-task behavior over time. Observations three through six were a part of the post-intervention phase or phased out instruction of the assignment attack strategy. Even after five weeks without the instruction of the strategy, students' on-task behavior still showed improvement as a result of the intervention, showing longevity of results. Table 3 supports the claim that students were able to apply the assignment attack strategies after intervention over an extended period of time showing true generalization of the skills. I defined generalization as the ability to apply a skill to a different context in which the skill was not taught. During science class, students' scores dipped for observation three. For example, Michael was on-task for 75% of observation three compared to 100% on observation four and 91.6% on-task for observation five. This dip in on-task behavior may have been because the students were working in groups, which can be distracting to students. Students were marked off-task if they were having personal conversations that did not relate to the assignment at the three-minute observation interval. The post intervention observation data show that the effects of the assignment attack instruction had longevity over time after the treatment was stopped (Table 3).

The findings of the observations over time seem to support what other researchers have indicated in previous studies (McLaughlin, Krappman, & Gorman, 1991). Students who learn to self-monitor in the resource room setting were able to rely less on teacher help and prompting when doing independent work and these skills that were learned were generalized to novel settings (McLaughlin et al., 1991). Students in the current study were more on-task in class after learning the assignment attack strategy. The three students had high rates of on-task behavior in the new setting, which suggests generalization of the strategies occurred. If the students are on-task, they do not require teacher prompting and cuing to focus or to get back to work.

Table 3. Longevity data collection- observations three through six of on-task behavior

	Observation 3	% On-Task	Observation 4	% On-Task	Observation 5	% On-Task	Observation 6	% On-Task	Average % On-Task
Michael	9/12	75%	12/12	100%	11/12	91.6%	12/12	100%	91.6%
April	10/12	83%	12/12	100%	12/12	100%	11/12	91.6%	93.8%
Christian	10/12	83%	12/12	100%	12/12	100%	11/12	91.6%	93.8%

Teaching the assignment attack strategy increased on-task behavior in all three students. In the science classroom, on-task behavior data were collected before intervention and after intervention. Table 4 shows a difference in the average of the pre and post intervention data in order to illustrate the extent to which the intervention influenced on-task behavior. For example, Christian was on-task 49.95% during baseline

observations compare to 93% during post intervention observations. On-task behavior increased for all three students in my study, which gives credibility to the intervention, student learning, and the way it was implemented. April had very little room to improve based on the baseline data that showed that the frequency of her on-task behavior before intervention was an average of 91.6% on-task.

According to self-monitoring research, studies show that teaching self-monitoring improves attention, productivity, and frequency with on-task behaviors (Cole, Marder, & McCann, 2000; Shapiro & Cole, 1994). The students in my study seemed to learn to self-monitor using the assignment attack strategy in the resource room setting. Based on my data, the students on-task behavior was greatly influenced from the training and the independent, on-task behavior transferred to the science classroom.

These findings are similar to the results from Ness and Sohlberg (2013) in that positive academic behaviors, such as on-task behavior, were a result of learning the assignment attack strategy. Ness and Sohlberg (2013) demonstrated that a teacher can deliver effective instruction of strategies to improve self-regulation and assignment attack to students. Ness and Sohlberg (2013) evaluated if the effects of the assignment attack strategy on assignment initiation, engagement, and student behavior. A difference in the Ness and Sohlberg (2013) study compared to my study was that the strategy was taught to three different resource room classrooms and one student from each class was observed for research. Their findings demonstrate that assignment attack could be taught in three different classrooms so my study focused on three students in one resource room classroom and science classroom.

Table 4. Difference in percentages of on-task behavior before and after intervention to show overall growth for on-task behavior

Frequency of on-task	Average Baseline	Average After Intervention (Observations one through six)	Growth
Michael	36.07% time on-task	93% time on-task	+ 56.93%
April	91.6% time on-task	95.8% time on-task	+ 4.2%
Christian	49.97% time on-task	93% time on-task	+ 43.03%

Teacher surveys indicated positive results. The science teacher observed positive changes in on-task behavior at the end of the study compared to the observations before the study took place. Figure two illustrates the science teacher's perspectives on the students' abilities to self-regulate to be on-task. The survey asked the teacher to score each student on their ability to work independently, sustain attention for the expected duration of time, and how many prompts each student required. On the pre-intervention survey Michael scored five out of 12 points, April scored eight out of 12 points, and Christian scored two out of 12 points. Two weeks after any intervention, I asked the science teacher to complete a post-intervention survey. On this measurement Michael scored nine out of 12 points (+four) April scored eight out of 12 points (gain of zero), and Christian scored seven out of 12 points (+five). According to this data, Christian improved by five points and Michael improved by four points. This meant that the science teacher was seeing that these students are working more independently and are

requiring less prompting. Results indicated that after the assignment attack strategy was taught in the resource room, the students transferred these skills to the science classroom and as a result their self-regulation and time on-task increased. A piece of evidence that supports this claim is the pre-intervention survey and post- intervention survey that the students' science teacher submitted (Figure 2).

The science teacher reported that after learning the assignment attack strategy in the resource room setting, two of the three students transferred the skills to the science classroom. These data support that the strategies transferred because, as a group, the students' average score increased by 25%. To look at the data more closely, the teacher reported that, in general, Michael demonstrated the steps of the assignment attack strategy after instruction independently or with one prompt. Whereas before intervention, the components of assignment attack required multiple prompts.

In addition, before intervention, Christian needed more than one prompt for two components of the assignment attack strategy and never displayed two components of the assignment attack strategy such as having his assignment out in front of him when expected and sustaining work for the expected period of time. After intervention, Christian improved in all categories to needing only one prompt for all components of the strategy and needing more than one prompt to sustain work for the expected period of time. All of which was a dramatic improvement and shows that the students were able to transfer the skills learned in the resource room into the science classroom.

As stated previously, Winne (2001) argued that metacognitive monitoring is an important part of self-regulated learning because it helps a student identify if they are

struggling and to determine an effective strategy to use to regulate thinking and continue working. The data shows that all students improved in the area of sustaining attention to assignments for the expected period of time after the assignment attack intervention which included self-regulation. Metacognitive monitoring can be taught in the small group setting and these skills can be transferred to the science classroom.

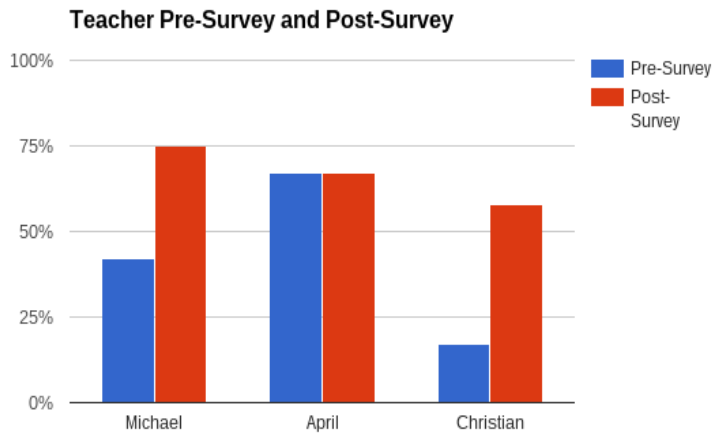


Figure 2. Science teacher perspectives on on-task behavior from a pre and post survey

Increasing the duration of time on-task. Figure three illustrates that the students learned to sustain attention to tasks in the classroom by learning the assignment attack strategy. In the pre and post intervention survey, the science teacher reflected on the extent to which each student was able to sustain attention to the task at hand. In the middle school classroom, students are expected to sustain attention to tasks and work independently for upwards of 40 minutes.

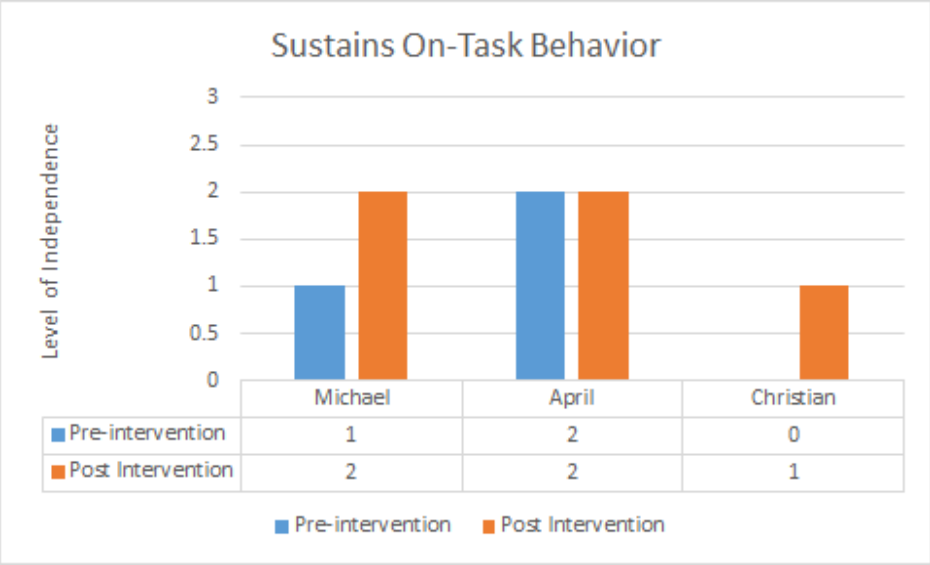
The teacher was asked to rank students' level of independence in staying on-task in the science classroom, through indicating how many prompts each student needed to

stay on-task and sustain attention in the classroom. A score of zero meant that the student was never on-task, a score of one meant the student needed more than one prompt to sustain attention, a score of two represented a student needs only one prompt to sustain attention, and a score of three meant that a student independently sustained attention for the expected period of time. The science teacher served as a measure for the extent to which students were able to be on-task and sustain work in the science classroom.

Again, the purpose of this study was for the science teacher to see if student's independent, on-task behavior increased. The science teacher reflected that after intervention Michael was able to sustain attention with one prompt compared to more than one prompt before intervention. April required one prompt to sustain attention before intervention and after intervention. Before intervention, Christian was never on-task and after intervention according to the teacher survey, the science teacher reported that Christian required more than one prompt to sustain attention for the expected period of time.

The goal of the intervention was for students to require less prompting in the science classroom to be able to sustain working and stay on-task independently with less teacher prompting. According to the data, two of the three students in my study improved in their level of independence to stay on-task for the expected period of time in the science classroom. On-task behavior is an important component to being able to sustain focus on a given task without becoming distracted by oneself or others in the classroom. The students learned how to sustain attention and be more on-task in the

science classroom through learning how to self-monitor and self-assess in the resource room setting.



0= never 1= more than one prompt 2=one prompt 3= independent, no prompts

Figure 3. Teachers' observations and ratings of students' on-task behavior throughout class

I ran a paired t-test on the baseline and post intervention rates of on-task behavior. I chose to exclude April as an outlier in my statistical analysis because she scored so high during the baseline observations and continued to score very high in post-intervention observations. The results of the paired t-tests of the two boys showed that the difference in the means was statistically significant, the p-value was very small at 0.001 which is well below a 95% confidence level of 0.05. Therefore, this difference in the means is significant even with a low n-value of two students.

Likewise, I chose to run a paired t-test including April, even though her data was on outlier. Even including the outlier in my statistical analysis, my data is still highly

significant with a small p-value of .002561 which is below a 95% confidence level of 0.05. Typically, outliers skew data, but in this study, even the skewed data was within a 95% confidence level and significant. Based on these results, the students' on-task behavior was likely influenced from the instruction during the intervention phase and the on-task behavior observed in the resource room transferred to the science classroom. According to the teacher survey, two of the three students in my study improved in their level of independence to stay on-task for the expected period of time in the science classroom. Overall, the results from my study illustrate that students with disabilities served in the general education classroom can learn self-regulation and self-monitoring to increase on-task behavior in the science classroom.

SECTION FIVE

Conclusion

In general, research indicates that self-monitoring and self-regulation are useful strategies to increase on-task student behavior in the special education classroom and the general education classroom (McDougall, 1998; Shapiro & Cole 1994.) The results of my study indicate that students were able to transfer strategies that they learned in resource room and were able to "take it with them" to the science classroom. Teaching the assignment attack strategy increased on-task behavior for all three students. In the science classroom, on-task behavior data was collected before intervention and after intervention. Benchmark observational data, or the data collected during the intervention phase, showed a dramatic improvement of on-task behavior for all three students after one week of intervention. Observations three through six were a part of the post-intervention phase. Even after five weeks without additional instruction, students' on-task behavior still showed improvement, showing longevity of results.

Study Limitations

Sample Size. The primary limitation of the study is that sample size was constrained to three students. A larger sample size may have provided more conclusive results that could be replicated more closely in future studies.

Control Group. One consideration that I did not explore in my study was the use of a control group and a resign design that would have provided a comparison of results. It could have been interesting to have a control group to evaluate on-task data to compare

with my students who got the treatment in the study. It is possible that students progressed due to traditional instruction in the classroom.

The medium used in assignments. A limitation of this study for baseline data, benchmark data, and summative data is that there were differences in assignments during the duration of this research in the science classroom. Some of these assignments included online work, online research, bookwork, and paper and pencil work. Every student has different interests and learning styles. The method of learning may have affected the data in this study if a student was more or less motivated by a certain method of learning. Another significant change in assignment directions over the study was independent work, partner work, and group work. This may have affected the results because some students like to work in groups and some students prefer to work independently. Their motivation and on-task behavior may have been affected by this factor.

Implications for Teaching and Research

This study focused on the transfer and generalization of an assignment attack strategy from a resource room classroom to a science classroom. With these results, special education teachers could collaborate with general education teachers to teach the mini-lessons of the assignment attack strategy to the science classroom as a whole to benefit all students. Further research could determine if assignment attack skills taught in the resource room could transfer to other content area classrooms.

It seems special education teachers can teach the assignment attack strategies and teach students how to self-monitor and self-regulate in the resource room in order to increase on-task behavior in other content classrooms. This is important because learning the strategies does not take up valuable content time in which content specific curriculum needs to be taught.

Likewise, general education teachers can teach students how to self-monitor in the classroom to increase on-task behavior. Even students who don't have special needs can use skills and strategies to increase on-task behavior in the classroom. As in my study, students gain a sense of awareness of time when they are monitoring their behavior every few minutes. This in turn, increases their focus because they are motivated to be more on-task as they monitor. To increase generalization and transfer, it could be useful to have teachers work together across content areas to discuss student progress and behavior. Therefore teachers could reinforce positive changes and reinforce support if students are continually struggling with being off-task. In future research, studies could include more students to have a bigger n-value. In addition, studies could include students who do not have documented disabilities as many students struggle to attend in the classroom.

LIST OF REFERENCES

Azevedo, R., Moos, D., Witherspoon, A., & Chauncey, A. (2009). Issues in the Measurement of Cognitive and Metacognitive Regulatory Processes Used During Hypermedia Learning. *Cognitive and Metacognitive Educational Systems*.

Bandura, A. (1989). Social cognitive theory. In R. Vasta (Ed.), Annals of child development. Vol. 6. Six theories of child development (pp. 1-60).

Bandura, A. (1997). *Self- Efficacy: The Exercise of Self Control*. New York: W.H. Freeman.

Boyer, L., & Mainzer, R. (2003). Who's Teaching Students with Disabilities? A Profile of Characteristics, Licensure Status, and Feelings of Preparedness. *Teaching Exceptional Children,* 35(6), 8-11.

Clampit, B. , Hollifield, M. , & Nichols, J. (2004). Inclusion rates as impacted by the perceptions of teachers' attitudes , ses, and district enrollment. *National Forum of Special Education Journal*, 14(3), 16-32.

Cole, C. L., Marder, & McCann, L. (2000). Self-monitoring.Conducting school-based assessments of child and adolescent behavior, 121-149.

Davis, T. N., Dacus, S., Bankhead, J., Haupert, M., Fuentes, L., Zoch, T., & ... Lang, R. (2014). A Comparison of Self-Monitoring with and without Reinforcement to Improve On-Task Classroom Behavior. *Journal Of School Counseling*, *12*(12).

Flavell, J. (1979). Metacognition and cognitive monitoring. *American Psychologist, 34*, 906-911.

Frederick, M., Courtney, S., & Coniglia, J. (2014). With a Little Help from my Friends: Scaffolding techniques in Problem Solving. *Investigations in Mathematics Learning, 7*(2), 21-32.

Greene, J., Moos, D., & Azevedo, R. (2011). Self-regulation of learning with computer-based learning environments. *New Directions for Teaching and Learning*, 107-115.

Greene, J., Muis, K. R., & Pieschl, S. (2010). The Role of Epistemic Beliefs in Students' Self-Regulated Learning with Computer-Based Learning Environments: Conceptual and Methodological Issues. *Educational Psychologist, 45*(4), 245-257.

Heward, W. (2006). *Exceptional Children* (8th ed.). NJ: Pearson Education.

Hamman, D., Lechtenberger, D., Griffin-Shirley, N., & Zhou, L. (2013). Beyond Exposure to Collaboration: Preparing General-Education Teacher Candidates for Inclusive Practice. *Teacher Educator,* 48(4), 244-256.

Hodgson, J., Lazarus, S., Thurlow, M., (2011) Professional Development to Improve Accommodations Decisions--A Review of the Literature. Synthesis Report 84. National Center on Educational Outcomes, University of Minnesota.

Holton, D., & Clarke D. (2006). Scaffolding and metacognition. *International Journal of Mathematical Education in Science & Technology*, 37(2), 127-143.

Klassen, R. M., Krawchuk, L. L., & Rajani, S. (2008). Academic Procrastination of Undergraduates: Low Self-Efficacy to Self-Regulate Predicts Higher Levels of Procrastination. *Contemporary Educational Psychology*, 33(4), 915-931.

Lajoie, S., & Azevedo, R. (2014). Teaching and Learning in Technology-Rich Environments. *Handbook of Educational Psychology*.

Li, J. (2008). Ethical Challenges in Participant Observation: A Reflection on Ethnographic Fieldwork. *The Qualitative Report, 13*(1).

Mahlberg, J. (2015). Formative Self-Assessment Classes Improves Self-Regulation and Retention in First/Second Year Community College Students. *Community College Journal Of Research And Practice*, *39*(8), 772-783.

McDougall, D. (1998). Research On Self-Management Techniques Used By Students With Disabilities In General Education Settings: A Descriptive Review. *Remedial and Special Education,* 310-320.

McWhaw, K., & Abrami, P. C. (2001). Student goal orientation and interest: Effects on Students' use of self-regulated learning strategies. *Contemporary Educational Psychology,* 26 (3), 311–329.

Mertler, C. A., & Charles, C. M. (2011). *Introduction to Educational Research* (7th ed.). Boston, MA: Pearson Education.

Mevarech, Z., & Amrany, C. (2008). Immediate And Delayed Effects Of Metacognitive Instruction On Regulation Of Cognition And Mathematics Achievement.*Metacognition and Learning,* 147-157.

Nelson, R. O., & Hayes, S. C. (1981). Theoretical explanations for reactivity in self-monitoring. *Behavior Modification,* 5(1), 3-14.

Ness, B., & Sohlberg, M. (2013). Self-regulated Assignment Attack Strategy: Evaluating the Effects of a Classroom-level Intervention on Student Management of Curricular Activities in a Resource Context.*Learning Disabilities: A Contemporary Journal, 11*(1), 35-52.

Onemli, M., & Yondem, Z. D. (2012). The Effect of Psychoeducational Group Training Depending on Self Regulation on Students' Motivational Strategies and Academic Achievement. Educational Sciences: Theory And Practice, 12(1), 67-73.

Osgood, R.L. (2005). The history of inclusion in the United States. Washington, DC: Gallaudet University Press.

Paterson, C. (1996). Self regulated learning and academic achievement of senior biology students. *Australian Science Teachers Journal,* 42 (2), 48–52.

Pintrich, P. R., & De Groot, E. (1990). Motivational and self regulated learning components of classroom academic performance. *Journal of Educational Psychology,* 82 (1), 33–50.

Reid, R., & Trout, A. (2005). Self-Regulation Interventions for Children With Attention Deficit/ Hyperactivity Disorder. *Council for Exceptional Children,* 71(4), 361-377.

Scheiter, K., & Gerjets, P. (2007). Learner Control in Hypermedia Environments. *Educational Psychology Review,* 285-307.

Shapiro, E. S., & Cole, C. L. (1994). Behavior change in the classroom: Self-management interventions. Guilford Press.

Soung Y. K. (2001). Investigating the relationship between motivational factor and self regulatory strategies in the knowledge construct process. http://www. Icce.2001.pdf.

Stoeger, H., & Ziegler, A. (2008). Evaluation of a classroom based training to improve

self-regulation in time management tasks during homework activities with fourth graders. *Metacognition and Learning*,207-230.

Sungur, S. (2004). In implementation of problem based learning in high school biology courses. Unpublished doctoral dissertation, ODTÜ, Ankara.

Thirty first Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, Parts B and C. 2009. (2009). Retrieved from http://www2.ed.gov/about/reports/annual/osep/2009/parts-b-c/index.html

Tuysuzoglu, B., & Greene, J. (2014). An investigation of the role of contingent metacognitive behavior in self-regulated learning. *Metacognition and Learning Metacognition Learning*, 77-98.

US Department of Education (2009). 31st annual report to Congress on the implementation of the Individuals with Disabilities Education Act. Washington, DC: Author

VanderStoep, S. W., Pintrich P. R., & Fagerlin, A. (1996). Disciplinary differences in Self-regulated learning in college students. *Contemporary Educational Psychology*, 21, 345- 362.

Winne, P.H. (2001). Self-regulated learning viewed from models of information processing. in B. J. Zimmerman & D. H. Schunk (Eds.), Self-regulated learning and academic achievement: Theoretical perspective (pp.153-189).

Wolters, C. A., & Rosenthal, H. (2000). The relations between students' motivational beliefs and their use of motivational regulation strategies. *International Journal of Educational Research*, 33, 801–820.

Winn, J., & Blanton, L. (2005). The Call for Collaboration in Teacher Education. Focus On *Exceptional Children,* 38(2), 1-10.

Zimmerman, B., & Martinez-Pons, M. (1990). Student Differences In Self-regulated Learning: Relating Grade, Sex, And Giftedness To Self-efficacy And Strategy Use. J*ournal of Educational Psychology*,51-59.

Zimmerman, B. (2001). Theories of self-regulated learning and academic achievement: An overview and analysis.

Appendix A

Student Self-Monitoring Form

Am I on-task?

3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54
+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -

Appendix B

Student Assignment Attack Reminder Sheet

1. Have my assignment out and ready
2. Have all assignment materials ready
3. Start my work quickly
4. Keep working until the teacher tells me to stop

Appendix C

Student Self-Assessment

Name_____ Date_____ Session_____

Self-monitoring Student Assessment

_____

Was my assignment ready when my teacher expected it to be?

2 Yes | 1 With Reminders | 0 No

_____

Were my materials ready?

2 Yes | 1 With Reminders | 0 No

_____

I started working...

2 By Myself | 1 With Reminders | 0 No

_____

I kept working the whole time I was expected…

2 Yes | 1 With Reminders | 0 No

Appendix D

Science Teacher Survey

Pre-intervention General Education Survey Date:

Assignment in front of student when expected _____/3-independent _____/2- with one prompt _____/1- with more than one prompt _____/0- never Possession of resources and technology, materials _____/3-independent _____/2- with one prompt _____/1- with more than one prompt _____/0- never Initiate assignment *(if working in a group, the student engages appropriately with group members) _____/3- independent with 0 special directions _____/2- with one prompt _____/1- with more than one prompt _____/0- never Sustains work on assignment for expected period of time _____/3- independent with 0 special directions _____/2- with one prompt _____/1- with more than one prompt _____/0- never ____/12 Total Notes:	Assignment in front of student when expected _____/3-independent _____/2- with one prompt _____/1- with more than one prompt _____/0- never Possession of resources and technology, materials _____/3-independent _____/2- with one prompt _____/1- with more than one prompt _____/0- never Initiate assignment *(if working in a group, the student engages appropriately with group members) _____/3- independent with 0 special directions _____/2- with one prompt _____/1- with more than one prompt _____/0- never Sustains work on assignment for expected period of time _____/3- independent with 0 special directions _____/2- with one prompt _____/1- with more than one prompt _____/0- never ____/12 Total Notes:	Assignment in front of student when expected _____/3-independent _____/2- with one prompt _____/1- with more than one prompt _____/0- never Possession of resources and technology, materials _____/3-independent _____/2- with one prompt _____/1- with more than one prompt _____/0- never Initiate assignment *(if working in a group, the student engages appropriately with group members) _____/3- independent with 0 special directions _____/2- with one prompt _____/1- with more than one prompt _____/0- never Sustains work on assignment for expected period of time _____/3- independent with 0 special directions _____/2- with one prompt _____/1- with more than one prompt _____/0- neve ____/12 Total Notes:

Appendix E

Data Collection Form

Date: Session: Mood: Limitations- strange occurrences:

Notes:

Malik- Assignment in front of student.
_____ /2-independent
_____ /1- prompting
_____/0- not completed
____ Time to criterion- latency
Notes: How many prompts?

Resources and technology, materials ready
____ /2- Independent
____ /1- prompting
____/0- not completed
____ Time to criterion- latency
Notes: How many prompts?

Initiate assignment
____/2- independent with 0 special directions
____/1- prompting
____/0- not initiated
____ Time to criterion- latency
Notes: How many prompts?

Sustains work for expected period of time
____/2- independent with 0 special direction
____/1- prompting
____/0- not initiated
Notes: How many prompts?

3	6	9	12	15	18	21	24	27	30	33	36

____ % of time on task- fixed interval every 3rd minute

Autumn- Assignment in front of student.
_____ /2-independent
_____ /1- prompting
_____/0- not completed
____ Time to criterion- latency
Notes: How many prompts?

Resources and technology, materials ready
____ /2- Independent
____ /1- prompting
____/0- not completed
____ Time to criterion- latency
Notes: How many prompts?

Initiate assignment
____/2- independent with 0 special directions
____/1- prompting
____/0- not initiated
____ Time to criterion- latency
Notes: How many prompts?

Sustains work for expected period of time
____/2- independent with 0 special direction
____/1- prompting
____/0- not initiated
Notes: How many prompts?

3	6	9	12	15	18	21	24	27	30	33	36

____ % of time on task- fixed interval every 3rd minute

Chris- Assignment in front of student.
_____ /2-independent
_____ /1- prompting
_____/0- not completed
____ Time to criterion- latency
Notes: How many prompts?

Resources and technology, materials ready
____ /2- Independent
____ /1- prompting
____/0- not completed
____ Time to criterion- latency
Notes: How many prompts?

Initiate assignment
____/2- independent with 0 special directions
____/1- prompting
____/0- not initiated
____ Time to criterion- latency
Notes: How many prompts?

Sustains work for expected period of time
____/2- independent with 0 special direction
____/1- prompting
____/0- not initiated
Notes: How many prompts?

3	6	9	12	15	18	21	24	27	30	33	36

____ % of time on task- fixed interval every 3rd minute