

JTAR

EDITORS

GIL NAIZER

APRIL SANDERS

LAURA ISBELL

TAMI MORTON

SUSAN WILLIAMS



Journal of Teacher Action Research - Volume 5, Issue 2, 2019,
practicalteacherresearch.com, ISSN # 2332-2233

© JTAR. All Rights Reserved

JTAR

Journal of Teacher Action Research Volume 5, Issue 2, 2019

Procedural Checklist Intervention to Increase Math Assignment Completion Among Students with High Incidence Disabilities Martin Rios Calli Lewis Chiu	4
Parallel Conferencing: Co-Viewing And Co-Assessing Teacher Candidates' Videos Stephanie Kotch-Jester Elizabeth Soslau Vicki Goettel Bridget Duda Nicholas Bell Deirdre Lilly	22
Reflections: Exploring Student Writing Self-Efficacy In the Online Environment Sharonica Nelson	39
Engaging Education Majors To Embrace Diversity Through Expressive Arts Annette Mohan Grace Jepkemboi	56
Reshaping Practice: An Action Research Project Exploring Writing Instruction Kate Roll Margaret Vaughn	77
Writing in Mathematics to Increase Student Understanding Ashley Harlan	95
Perceptions of Flexible Seating Mary Ellen Sorrell	120



About the Journal

Founded in 2013, the Journal of Teacher Action Research (ISSN: 2332-2233) is a peer-reviewed online journal indexed with EBSCO that seeks practical research that can be implemented in Pre-Kindergarten through Post-Secondary classrooms. The primary function of this journal is to provide classroom teachers and researchers a means for sharing classroom practices.

The journal accepts articles for peer-review that describe classroom practice which positively impacts student learning. We define teacher action research as teachers (at all levels) studying their practice and/or their students' learning in a methodical way in order to inform classroom practice. Articles submitted to the journal should demonstrate an action research focus with intent to improve the author's practice.

Editorial Team

Co-Editors

Gilbert Naizer, Ph.D.
Texas A&M University-Commerce

April Sanders, Ph.D.
Spring Hill College

Associate Editors

Laura Isbell, Ph.D.
Texas A&M University-Commerce

Tami Morton, Ph.D.
Texas A&M University-Commerce

Susan Williams
Texas A&M University-Commerce

Production Editor and Webmaster

Chase Young, Ph.D.
Sam Houston State University

www.practicalteacherresearch.com

PROCEDURAL CHECKLIST INTERVENTION TO INCREASE MATH ASSIGNMENT COMPLETION AMONG STUDENTS WITH HIGH INCIDENCE DISABILITIES

Martin Rios

Delano Adult School

Calli Lewis Chiu

California State University, Fullerton

Abstract Federal law mandates that students with disabilities be educated in the least restrictive environment to promote equal access to the general education curriculum. Students with disabilities who demonstrate challenging behaviors in general education classrooms may present general education teachers with unique challenges if the teachers are unprepared to differentiate instruction for these students. This study investigated the effects of a procedural checklist on rates of task completion among three students with high incidence disabilities who exhibited significant challenging behavior in a general education classroom setting. The intervention was correlated with increased rates of task completion for the three participants.

Keywords: teacher action research, special education, high incident disabilities, self-monitoring, behavior management

Introduction

Federal legislation mandates that students with disabilities be educated in the least restrictive environment (IDEA, 2004); therefore, an increasing number of students with disabilities are being educated in general education settings (Carson, 2015; Kurth, Lyon, & Shogren, 2015). This scenario can be challenging for general education teachers who may find it difficult to differentiate instruction for these students. In addition to differentiating academic content, many teachers struggle to implement effective behavior management strategies for students with disabilities who exhibit challenging behaviors (Kostewicz, Ruhl, & Kubina, 2008).

Literature Review

Students with disabilities who exhibit challenging behaviors demonstrate low levels of high school completion and low grade point averages (Sutherland & Singh, 2004; Wagner, 1995; Wood & Cronin, 1999). Students who continually disrupt class or distract other students from completing their assignments frequently encounter disciplinary consequences: being sent to the discipline office, suspension, expulsion, or placement at alternative learning settings (Gable, Bullock, & Evans, 2006). Not only are suspension and expulsion exclusionary disciplinary practices, they fail to promote prosocial decision making (Cameron & Sheppard, 2006). Furthermore, the measures may not dissuade the students from engaging in such behaviors (Maag, 2002).

When students with disabilities are placed in restrictive settings due to their actions, they do not have adequate access to the general education curriculum and have diminished opportunities to engage with peers without disabilities (Turnbull, Huerta, & Stowe, 2006). The lack of academic and social resources may result in a substandard education with increased rates of course failure and poor test scores (Kochhar-Bryant & Greene, 2009). The removal of the students from their typical classrooms decreases their academic performance because they spend less time receiving rigorous academic instruction (McDaniel & Flower, 2015). Research suggests that students with challenging behaviors who are not taught how to manage their behavior in a systematic manner are more likely to be unsuccessful in academic settings (Nelson, Benner, Lane, & Smith, 2004; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004).

Students who exhibit challenging behaviors may demonstrate these behaviors as a protective shield from the constant academic failures they encounter (Gable et al. 2006). The behaviors may be displayed to conceal students' frustration and difficulty in comprehending academic content and to avoid being labeled derogatory terms due to failing master academic tasks. Therefore, the development and implementation of procedures that support academic success and subsequently minimize displays of challenging behaviors are essential (Denune, Hawkins, Donovan, McCoy, Hall, & Moeder, 2015).

Teachers develop and implement classroom management procedures and strategies to create positive learning environments and to support students in reaching their academic potential (Denune et al., 2015; Kostewicz et al., 2008). For example, a token economy system is a classroom management strategy in which students are given tokens when desired behaviors are demonstrated. The tokens are later exchanged for reinforcements (e.g., food, toys) or classroom privileges (e.g., computer time; Alberto & Troutman, 2006). Educators must provide clear expectations and utilize strategies consistently to minimize behavioral problems.

Teachers must have access to proactive strategies to assist students with disabilities who demonstrate challenging behaviors to support their academic progress (Houchens, Zhang, Davis, Niu, Chon, & Miller, 2017). Research indicates that an effective way to promote academic proficiency among students with disabilities is to implement self-monitoring strategies (SMSs; Amato-Zech, Hoff, & Doepke, 2006; Menzies, Lane, & Lee, 2009; Sheffield & Waller, 2010). SMSs can be individualized to reinforce positive behavior, chunk classroom assignments into manageable pieces, encourage on-task behavior, and/or provide students with breaks after designated periods of task engagement.

Self-Monitoring Strategies (SMS). The implementation of SMSs can improve students' behavior and increase academic progression (Shulze, 2016). Self-management encompasses several strategies that assist students in managing and shaping their own behavior (Cooper, Heron, & Heward, 2007). The implementation of SMSs involves several components that are essential when teaching students how to monitor and change their behavior. The primary objective of SMSs is to teach students how to assess, observe, and identify gradual changes in current behavior that correlates to the target behavior (Shulze, 2016). SMSs are one type of evidence-based intervention that can help students increase task completion and decrease incidents of challenging behavior.

SMSs incorporate multi-step procedures that teach students to record when a behavior does or does not occur (Mace, Belfiore, & Hutchinson, 2001). A SMS requires the student to record their performance on a target behavior based on pre-determined definitions and criteria (Rafferty & Raimondi, 2010). The teacher and the student work collaboratively to set goals related to a target behavior (Menzies et al., 2009). For example, the teacher and student may determine what is an acceptable number of undesired behavior occurrences that the student can demonstrate and what reinforcements will be implemented for meeting the goal. The SMS assists the student in being aware of the challenging behaviors. SMSs have been effective for students with many different categories of disabilities and for students ranging from pre-school age to high school age (Lewis, Hudson, Richter, & Johnson, 2004). The use of an SMS is beneficial for students that exhibit challenging behaviors because the students learn to be self-reliant and responsible for their own actions. Also, students can generalize and maintain desired levels of behaviors in the general education classroom when they use SMSs (Lewis et al., 2004; McConnell, 1999).

Research supports that self-monitoring interventions are effective in reducing a variety of challenging behaviors. For example, SMSs have been used to address both disruptive and off-task behaviors (Guereasko-Moore, DuPaul, & White, 2007; Levendoski & Cartledge, 2000), engagement in direct instruction (Brooks, Todd, Tofflemoyer, & Horner, 2003), and following class rules (Agran, Sinclair, Alper, Cavin, Wehmeyer, & Hughes, 2005). SMSs have also been associated with improvements in on-task behavior (Smith & Sugai, 2000; Stewart

& McLaughlin, 1992), increases in work completion (Brooks et al., 2003), and decreases in talking out (Smith & Sugai, 2000). If a student is exhibiting challenging behaviors, such as being off-task, an SMS can be used to guide the student through completing independent work or remaining focused during direct instruction. SMSs are evidence-based interventions that can be implemented in the general education setting to increase rates of assignment completion for students with challenging behaviors (Amato-Zech et al., 2006; Menzies et al., 2009; Sheffield & Waller, 2010).

Methodology

The current study examined whether a specific type of SMS, a procedural checklist (PC), was correlated with increases in rates of assignment completion in a general education math classroom. Participants were three students with high incidence disabilities who demonstrated challenging behaviors. The study sought to determine if the percentage of task completion of classroom assignments given to the participants in the math setting increased upon implementation and use of the PC.

Participants. The participants were three students receiving special education services at a public high school in the southwestern region of the United States. All participants were in the twelfth grade and ranged in age from 17 to 18 years old. One participant qualified for special education services under the category of specific learning disability (SLD). The second participant qualified for special education services under the category of multiple disabilities (MD) with a speech or language impairment (SLI). The final participant qualified for special education services under the category of other health impairment (OHI) with a secondary disability of SLD. All participants attended general education classes for the entirety of the school day. Participants were selected for the study because they demonstrated behaviors that impeded their progression regarding assignment completion, and all participants were failing their math class.

Participants attended a math class daily for 55 minutes. The model of academic instruction utilized at this high school is referred to as the “push-in” model. In this model, the special education teacher, who is the researcher, provided academic support in the general education setting, rather than providing educational services to students with disabilities in more restrictive, segregated settings. The special education teacher’s role was to differentiate instruction for students receiving special education services and to deliver explicit direct instruction in small groups to students who needed extra assistance with the mathematics concepts being taught. The special education teacher will be referred to as “the researcher” for the duration of this manuscript.

Leonel. Leonel demonstrated an intelligence quotient (IQ) score of 83 on the Kaufman Brief Intelligence Test-Second Edition (Kaufman & Kaufman, 2004), which is considered below

average in cognitive ability. Leonel scored a standard score of 61 on the Woodcock Johnson Test of Achievement Form B (Woodcock, McGrew, & Mather, 2001) in broad mathematics which is considered below average on math calculation skills, problem solving, and the ability to solve simple addition, subtraction, and multiplication facts quickly. Leonel qualified for special education services under the category of OHI. The researcher attended Leonel's math course (Consumer Math) three times a week for approximately 30 minutes each class. Leonel demonstrated difficulty remaining on-task and following directions to solve math problems. Prior to the introduction of the PC, Leonel got out of his seat, conversed with neighbors, used his cell phone without permission, and often directed profanity at the teacher. Leonel was hyperactive and appeared to enjoy receiving attention by distracting his peers. For example, Leonel randomly called out names of his friends, took pictures of himself, and left his chair as the teacher was delivering direct instruction.

Hannah. Hannah demonstrated an IQ score of 92 on the Test of Nonverbal Intelligence-Fourth Edition (Brown, Sherbenou, & Johnsen, 2010), which is considered in the average range when compared to the sample group of peers her age. Hannah scored a standard score of 68 on the Woodcock Johnson Test of Achievement Form C (Woodcock et al. 2001) in broad mathematics, which is considered below average on math calculation skills, problem solving, and the ability to solve simple addition, subtraction, and multiplication facts quickly. Hannah qualified for special education services under the category of MD with a secondary disability in the category of SLI. The researcher attended Hannah's Algebra 1 class three times a week for approximately 30 minutes each class. Prior to the introduction of the PC, Hannah easily grew distracted in-class. She averted eye contact from her worksheet and stared at the wall for long periods of time during lectures and independent work. She tapped her feet and fidgeted with her hair almost continuously when she worked on problems she did not understand. Hannah resisted help when approached by the researcher during independent work. If the researcher offered her assistance with a problem, she stated that she understood what she was doing, even though her responses to the problems were incorrect. Hannah was a quiet student and refrained from interacting with her peers.

Jose. Jose demonstrated an IQ score of 90 on the Kaufman Brief Intelligence Test-2nd Edition (Kaufman & Kaufman, 2004), which is in the average range of cognitive ability when compared to other students of the same age. Jose scored a standard score of 74 in the Woodcock Johnson Test of Achievement Form C (Woodcock et al., 2001) in broad mathematics, which is considered below average on math calculation skills, problem solving, and the ability to solve simple addition, subtraction, and multiplication facts quickly. Jose qualified for special education services under the category of SLD. The researcher attended Jose's Algebra 1 class at least three times a week for approximately 30 minutes per class. In his math class, Jose engaged in a significant amount of off-task conversation with his peers and frequently requested permission to use the restroom. Jose qualified for special

education services under the category of SLD in mathematics; therefore, completing basic mathematical procedures to solve problems was difficult for Jose. Jose took notes during lectures; however, he made it appear to the teacher that he was engaged in assignments even though he was not. For example, as the teacher was delivering direct instruction, Jose often appeared to pay attention by simulating that he was reading the class textbook. Instead, he would be drawing behind the worksheet. Also, when the teacher gave Jose an assignment and he opened his math book, he often became distracted and preferred to look at his drawings rather than engaging in the math work.

Setting. Baseline and intervention data were collected in the participants' math classrooms. Leonel's data were collected in his Consumer Math class, while Hannah's and Jose's data were collected in their Algebra 1 class. On average, there were a total of 20 students in each math class. The students' grade levels in the classes ranged between 10th and 12th grades. The general education teacher implemented an explicit direct instruction teaching method. The students were expected to take notes in a notebook when explicit direct instruction was being implemented, and independent work was assigned approximately four times per week. The work was to be completed independently at the students' assigned seats. The students were expected to show the procedures regarding how they solved each problem on a separate sheet of paper. All math worksheets given to students were curriculum resources from the textbook, *AGS Math for the World of Work* (Harmeyer, 2002). The worksheets correlated to the day's explicit direct instruction lesson. Prior to the start of class, the students were required to turn in the previous night's homework in a designated basket. Approximately every three weeks, the general education teacher gave each student a progress report that indicated the student's overall grade and missing assignments. If a student did not submit an assignment, the teacher assigned the student mandatory after-school disciplinary detention.

Intervention. The PC indicated specific steps participants needed to complete to solve problems correctly on the math worksheets. The PCs were created on three by five-inch index cards. Titles related to the concepts being taught each day were printed on the top of the cards. For example, if the concept being taught was finding the marked down value of an item, the title would be *Discount and Sale Price*. Below the title were key words and corresponding definitions. If the students were learning about discounts, the PC defined what the word *discount* meant. Beneath the vocabulary definition was an example of a problem from the worksheet. At the bottom of the card were two sections. On the left was a section labeled *Steps*. This section demonstrated the steps needed to solve the example problem. On the right was a section labeled *Did I do this step?* This section directed the participants to record a check mark as they completed each step needed to solve the problem. For example, if the participant followed steps one through three, a check mark would be marked next to those corresponding steps. The back of the index card illustrated another sample problem corresponding to a problem on the assigned worksheet. Thus, each

PC illustrated two example problems that required the use of the same steps. Since the math concepts taught by the teacher changed according to the scope and sequence of the curriculum, the PCs also changed to correlate with what was being taught. The following are sample titles and concepts that were illustrated on the PCs: *Simple Interest*, *Solving Algebraic Expressions*, *One-Step Equations*, and *Combining Like Terms*.

The researcher created the PCs several days in advance of each explicit direct instruction lesson. The general education teacher gave in-class assignments almost daily, and the researcher gave the PC to the participants before they entered the classroom. The participants used the PC with all independent work. The PCs were designed to simplify math concepts into individual steps that were presented in manageable increments for the participants. Rather than decreasing the amount of problems given to the participants on the in-class worksheets, the PCs were implemented to assist the participants in increasing their overall task completion percentages by simplifying the problems into individual steps. At the end of each session, participants returned the PCs to the researcher. In addition to the PC, the researcher and the three participants created a unique hand gesture that participants used as a signal to notify the researcher if they had questions or needed assistance. For example, a participant displaying a thumb up on the desk signaled to the researcher that the participant needed help.

Procedure. Before participants began using the PCs, the researcher met with the participants individually to discuss how PCs are used as a SMS. The researcher communicated to the participants that if they used the PC, their overall task completion percentage would likely increase. The researcher explained to the participants how the PCs were to be utilized by role-playing how the PC worked with each participant individually. The researcher engaged in role-play with all participants until they could use the PC with 100% accuracy. During this time, the participants were encouraged to ask questions about the PC. The participants were excited during the role-play because they understood the purpose of the PC. The researcher also explained to the participants that there would be a space on the side of each step that allowed them to place a checkmark once they completed that step. The researcher also reminded the participants of the hand gesture and that using the gesture notified the researcher to approach the participants because they needed help or had a question. The researcher practiced the hand gesture with all participants to ensure they were comfortable using it.

The researcher solicited input regarding the development of the PCs from the participants. The participants wanted the checklist to be the size of an index card so that their peers in the general education setting would not be able to determine they were receiving additional assistance. As a result, the PCs were created on small index cards. Since the math concepts presented throughout the research period changed, the researcher created checklists that corresponded to each concept that was taught.

Baseline and intervention data were collected by the researcher during the participants' math classes. During the classes, the participants were expected to complete worksheets that corresponded to the information presented during that day's math lesson. The problems on the math worksheets consisted of constructed responses or open response questions. For example, for constructed responses, the students had to obtain a specific answer to a math problem while an open response problem had multiple correct answers. To obtain the correct answer, participants had to follow specific steps; this was challenging for the participants. The number of questions on the worksheets varied from four to 30 questions. The study took place over 10 weeks. Prior to the introduction of the PC, the researcher collected data three times per week to determine baselines regarding the participants' rates of assignment completion.

The researcher maintained communication with the participants' general education math teachers to discuss the content taught and the assigned independent work. Since the researcher was the special education teacher in the participants' math classes, the researcher observed the behavior demonstrated by the participants, took notes regarding the assigned work, and recorded participants' percentages of task completion. The researcher calculated the percentage of task completion by dividing the amount of problems completed by the total amount of problems on the worksheet.

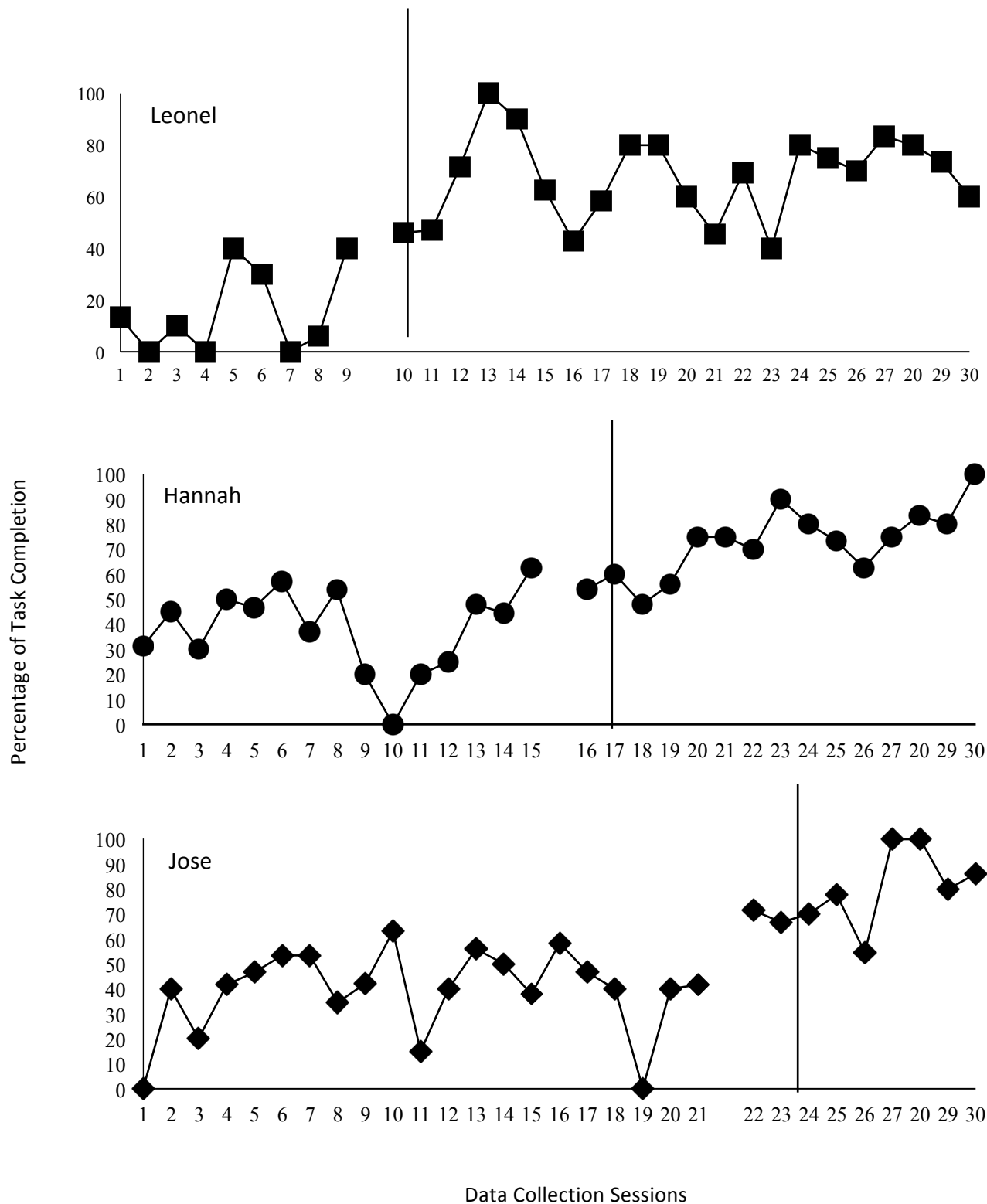
Data Analysis. The researcher implemented a multiple baseline with staggered start times research design to evaluate the effectiveness of the PC. Baseline data was collected for all participants during weeks one through three. During the fourth, the intervention was introduced to Leonel, and baseline collection continued with the other two participants. During the sixth week, the implementation of the intervention was introduced to the Hannah and baseline data continued with Jose. During week eight, the intervention was introduced to the Jose. The researcher collected both baseline and intervention data three times per week for throughout the study to gain determine participants' rates of assignment completion. The researcher compared baseline and intervention data to determine if there may be a correlation between the implementation of the PC and the percentage of task completion for the participants.

Results

The purpose of the study was to determine whether the use of PCs was correlated with increases in task completion among students with high incidence disabilities who demonstrated challenging behaviors in a general education math classroom. The researcher collected in-class math worksheets to determine the participants' assignment completion percentages. During the intervention period, participants used PCs on independent work to assist them in completing problems on math worksheets. The resulting data analysis

suggests that the PC intervention resulted in increased percentages of assignment completion for the three participants. The results are displayed in Figure 1.

Figure 1. Completion Percentages During Sessions



Note. The vertical lines designate when the intervention was implemented for each participant.

Leonel. During the baseline period, Leonel completed, on average, 17% of his classwork. Anecdotal notes revealed that on one occasion, Leonel got out of his chair and collected the class calculators even though the teacher instructed him not to do so. During session seven, when the general education teacher asked him to attend to his assigned work, Leonel refused to follow directions and directed profanity towards the teacher.

Initially, Leonel appeared to be excited to be the only student in the classroom to have a PC. During the first week of intervention, Leonel's overall attentiveness to the assignment increased. Leonel whispered to himself the steps that were illustrated on the checklist as he solved the math problems. When Leonel observed his peers struggling to complete a task, he shared his PC and taught them how to follow the steps needed to complete the problems. During session 13, Leonel began demonstrating challenging behaviors that distracted him during the assignments. During session 15, the researcher noted that the subject leaned on the air conditioning unit and engaged in off-task behavior. The researcher redirected Leonel to prevent him from engaging in such behavior and encouraged him to do his work. Leonel was given a two-minute break to talk to his peers when he completed a certain amount of questions from the worksheet.

During sessions 16 through 19, Leonel's percentage of assignment completion increased to approximately 80%. During this period, Leonel asked the general education teacher for his current grade on the class. Shortly after the teacher informed Leonel that he was at risk of failing the class because failure to submit class assignments, he promptly approached the researcher and asked him to develop PCs that correlated to the subject matter presented on the missing assignments. The researcher noted that Leonel copied the PC steps to solve a problem onto a separate page and took it home. During sessions 23 to 30, Leonel completed approximately 83% of his assignments with the use of the PC coupled with two minute breaks.

Hannah. During the baseline period Hannah completed, on average, 40% of her assignments. During session 10, Hannah completed 0% of the assignment. On that day, she drew two anime figures with flowers around them on the math worksheet. When the teacher saw that she did not complete her work that day, she was given a detention, and her parents were notified. After conferring with the parents, they informed the researcher that if Hannah's grades began to increase, and if she completed her assigned work, they would take her to Disneyland. Between session 10 to 15 during baseline, Hannah's task completion increased to approximately 65%.

When Hannah received her PC during the intervention period, she immediately put it away in her bag. It appeared that she did not want her peers to see the PC. The researcher spoke to Hannah after the first intervention session and developed a system that motivated her to use the PC. The participant and researcher came to an agreement that if Hannah completed

problems in increments of three, she would be given two minutes to draw on the PC. During sessions 16 through 23, Hannah's percentage of task completion increased to 90%.

Jose. During the baseline period, Jose got out of his seat to talk to his peers. During sessions one through 10, Jose completed up to 63% of his assignment. During Session 11, the general education teacher moved Jose from the front to the back of the room. Jose appeared to initiate conversation more than usual with his new female peer. Jose's percentage of task completion dropped from approximately 60% to 15% from session 18 to session 19. When Jose was introduced to his PC, he began to complete his work and checked off the steps needed to solve the problems on the worksheet.

Prior to receiving the PC, the researcher met with Jose and encouraged him to put forth more effort. As a reward for effort and completing assignments, the researcher allowed the participant to stand up and walk around the classroom for one minute. When Jose received the PC, he appeared to be more motivated to complete his assignments. From the last session of baseline to the first session of the intervention, Jose's percentage of task completion increased approximately 40%. Upon the completion of session 26, the general education teacher informed Jose that as a reward for completing assignments, he would be permitted to choose his seat. Between sessions 26 to 27, Jose's percentage of task completion increased to 100%. Though Jose struggled during some math concepts, it appeared that the implementation of the PC, with positive reinforcers given after assignment completion, assisted him with the breakdown of math problems into sequential steps. Jose checked off the steps delineated on the PC after he completed each task.

Discussion

The introduction of PCs with positive reinforcers were correlated with increases in task completion rate among three high school students with high incidence disabilities who exhibited significant challenging behaviors in their general education math classes. The participants were taught how to use PCs by the researcher prior to the implementation of the intervention. Using a multiple baseline with staggered start times research design, participants began utilizing the intervention at different time periods during the study. The results of this study suggest that the PC intervention along with positive reinforcers were effective in helping the participants break down each math problem into individual steps to increase task completion.

The PCs corresponded to direct instruction math concepts taught by the general education teacher. The participants were directed to complete individual steps, as outlined on the PC to solve the math problems. The PCs that were implemented in this study can be generalized to other academic contents by adjusting the steps needed to complete assignments in other content areas. For example, the PCs in the current study provided

vocabulary and delineated steps to solve sample math problems from the participants' math worksheets. For PCs to be utilized to another academic area, the PC would have to demonstrate an example that aligns with the subject matter.

Confounding variables may have influenced Hannah's results. During session 10, Hannah chose not to complete the in-class assignment. The general education teacher contacted Hannah's parents and informed them that she would be given a detention. After speaking to Hannah's parents, they informed the researcher that they made an agreement with Hannah. They stated that if Hannah completed her work, and did not receive another detention, they would take her to Disneyland as a reward. According to Figure 1, Hannah's assignment completion percentage began increasing after the Disneyland agreement had been established, when the intervention had not yet been introduced. Even though her percentage of task completion continued to increase after the intervention was implemented, the confounding factors of Disneyland and the incentive of free time to draw may have influenced Hannah's results.

The results of this study support the findings of previous research suggesting that when students who exhibit significant challenging behaviors learn to use SMSs, there is an increase in task completion (Sheffield & Waller, 2010; Shulze, 2016; Smith & Sugai, 2000). According to Alter (2012), when teachers who use a process-oriented instructional approach and outline specific steps to solve a problem, students develop basic mathematical computation skills and high level reasoning. The PC helped students solve math problems by breaking down each problem into individual steps, enabling the participants to complete tasks independently and decrease reliance upon teachers and peers (Amato-Zech et al., 2006).

Limitations

The limitations of the study pertain to data collection procedures. The researcher allocated time with the general education teacher to collect data for both baseline and intervention periods three times a week. However, there was an inconsistency in the data collection due to the general education teacher not implementing any independent work when the researcher had intended to collect data. For example, there were days in which the teacher reviewed for an exam, introduced a new mathematical concept using explicit direct instruction, or administered an exam. Due to the researcher not being able to collect data a minimum of three times a week for two weeks due to these factors, the researcher extended the study. The extra two weeks allocated to the study appear to have resulted in Leonel losing interest in following the PC. Leonel mentioned to the researcher that he was tired of following the PC and that he was ready to graduate from high school. The researcher encouraged Leonel to continue using the PC in the class due to his grade gradually rising. During the last two weeks of the study, Leonel began to exhibit behaviors similar to those displayed during baseline.

Prior to the administration of the PC, the researcher met with the participants and reviewed the procedures that detailed how the PC was a tool to be used during independent work. During the middle of the study, both a Thanksgiving and a winter break occurred, which totaled four weeks of participants being away from school. This period was embedded in the school calendar before the study began; therefore, the researcher had no control of this occurring. The inconsistency of the data collection due to these periods may have affected the percentages of task-completion. The participants had to be reminded about the PC because although the researcher continued to collect data after school resumed, the participants appeared to have forgotten how to use the PC. The percentage of task completion may have dropped due to the participants' time away from using the PC.

Another limitation to the current study is that data collection did not parse out the positive supports that were implemented in conjunction with participants' full or partial assignment completion. For example, the data collected does not determine if the PC alone influenced the participants' rates of assignment completion, or if additional incentives (time to draw, time to socialize with peers, option to choose preferred seat) given at various increments of assignment completion may have impacted the participants' rates of assignment completion. Despite these limitations, a significant amount of information was obtained from this study. The study showed that the implementation of a PC paired with positive reinforcement was correlated with increases in overall percentages of task completion.

Conclusion

The current study illustrates that the participants learned how to use a PC paired with positive reinforcement and their rates of assignment completion increased in a general education math setting. There are many possibilities for future research related to the current study. For example, the current study could be replicated with parameters regarding the amount of questions on the worksheets and time allocated to complete work to establish consistency among all participants for the entire duration of the study. The current study could also be replicated with data collection also focusing on positive reinforcements to accompany the PCs and accuracy of tasks completed. Task accuracy should be studied to determine if the implementation of PCs improves participants' abilities to answer questions correctly. Also, studying the effects of the use of PCs in other subject areas in the high school setting is warranted. Such research could help determine if students can be taught to generalize the use of PCs across academic areas. The use of a PC by students with high incidence disabilities who exhibit significant challenging behaviors promotes self-discipline and responsibility. To meet the unique needs of all learners, teachers should consistently seek evidence-based tools and strategies to support students' academic and behavioral needs.

About the Authors

Martin Rios, M.A. holds a mild/moderate teaching credential and teaches high school students with high incident disabilities at the Delano Adult School in Delano, California. Email: mrios@djuhsd.org

Calli Lewis Chiu, Ph.D. is an assistant professor of special education at California State University, Fullerton. Prior to entering the professoriate, she taught students with disabilities in variety of public school settings for 11 years. Email: calliglewis@gmail.com

References

- Agran, M., Sinclair, T., Alper, S., Cavin, M., Wehmeyer, M., & Hughes, C. (2005). Using self-monitoring to increase following-direction skills of students with moderate to severe disabilities in general education. *Education and Training in Developmental Disabilities, 40*(1), 3-13.
- Alberto, P. A., & Troutman, A. C. (2006). *Applied behavior analysis for teachers* (7th ed.). Upper Saddle River, NJ: Pearson Education Inc.
- Alter, P. (2012). Helping students with emotional and behavioral disorders solve mathematics word problems. *Preventing School Failure, 56*(1), 55-64.
- Amato-Zech, N., Hoff, K., & Doepke, K. (2006). Increasing on-task behavior in the classroom: Extension of self-monitoring strategies. *Psychology in the Schools, 43*(2), 211-221.
- Brooks, A., Todd, A. W., Tofflemoyer, S., & Horner, R. H. (2003). Use of functional assessment and a self-management system to increase academic engagement and work completion. *Journal of Positive Behavior Interventions, 5*(3), 144-152.
- Brown, L., Sherbenou, R. J., & Johnsen, S. K. (2010). *Test of Nonverbal Intelligence: TONI-4*. Austin, TX: Pro-Ed.
- Cameron, M., & Sheppard, S. M. (2006). School discipline and social work practice: Application of research and theory to intervention. *Children & Schools, 28*(1), 15-22.
- Carson, C. (2015). Rethinking special education's 'least restrictive environment' requirement. *Michigan Law Review, 113*(8), 1397-1426.
- Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis* (2nd ed.). Upper Saddle River, NJ: Pearson Merrill Prentice Hall.
- Denune, H., Hawkins, R., Donovan, L., McCoy, D., Hall, L., & Moeder, A. (2015). Combining self-monitoring and an interdependent group contingency to improve the behavior of sixth graders with EBD. *Psychology in the Schools, 52*(6), 562-577.
- Gable, R. A., Bullock, L. M., & Evans, W. H. (2006). Changing perspectives on alternative schooling for children and adolescents with challenging behavior. *Preventing School Failure, 51*(1), 5-9.
- Gureasko-Moore, S., DuPaul, G. J., & White, G. P. (2007). Self-management of classroom preparedness and homework: Effects on school functioning of adolescents with attention deficit hyperactivity disorder. *School Psychology Review, 36*(4), 647-664.
- Harmeyer, K. M. (2002). *AGS math for the world of work*. Circle Pines, MN: American Guidance Service.
- Houchens, G.W., Zhang, J., Davis, K., Niu, C., Chon, K.H., & Miller, S. (2017). The impact of positive behavior interventions and supports on teachers' perceptions of teaching

conditions and student achievement. *Journal of Positive Behavior Interventions*, 19(3), 168-179.

Individuals with Disabilities Education Act, 20 U.S.C. 1400 *et seq.* (2004).

Kaufman, A. S., & Kaufman, N. L. (2004). *Kaufman Brief Intelligence Test: KBIT 2; Manual*. Bloomington, MN: Pearson.

Kochhar-Bryant, C. A., & Greene, G. (2009). *Pathways to successful transition for youth with disabilities: A developmental process*. Upper Saddle River, NJ: Merrill.

Kostewicz, D. E., Ruhl, K. L., & Kubina, R. J. (2008). Creating classroom rules for students with emotional and behavioral disorders: A decision-making guide. *Beyond Behavior*, 17(3), 14-21.

Kurth, J. A., Lyon, K. J., & Shogren, K. A. (2015). Supporting students with severe disabilities in inclusive schools. *Research & Practice for Persons with Severe Disabilities*, 40(4), 261-274.

Levendoski, L. S., & Cartledge, G. (2000). Self-monitoring for elementary school children with serious emotional disturbances: Classroom applications for increased academic responding. *Behavioral Disorders*, 25(3), 211-224.

Lewis, T. J., Hudson, S., Richter, M., & Johnson, N. (2004). Scientifically supported practices in emotional and behavioral disorders: A proposed approach and brief review of current practices. *Behavioral Disorders*, 29(3), 247-259.

Maag, J. W. (2002). Rewarded by punishment: Reflection on the disuse of positive reinforcement in schools. *Exceptional Children*, 67(2), 173-186.

Mace, F. C., Belfiore, P. J., & Hutchinson, J. M. (2001). Operant theory and research on self-regulation. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement theoretical perspectives* (pp. 39-66). New Jersey, NJ: Lawrence Erlbaum Associates.

McConnell, M. E. (1999). Self-monitoring, cueing, recording, and managing: Teaching students to manage their own behavior. *Teaching Exceptional Children*, 32(2), 14-21.

McDaniel, S. C., & Flower, A. (2015). Use of a behavioral graphic organizer to reduce disruptive behavior. *Education and Treatment of Children*, 38(4), 505-522.

Menzies, H. M., Lane, K. L., & Lee, J. M. (2009). Self-monitoring strategies for use in the classroom: A promising practice to support productive behavior for students with emotional or behavioral disorders. *Beyond Behavior*, 18(2), 27-35.

Nelson, R., Benner, G., Lane, K., & Smith, B. (2004). Academic achievement of K-12 students with emotional and behavioral disorders. *Exceptional Children*, 71(1), 59-73.

- Rafferty, L.A., & Raimondi, S. L. (2010). Self-monitoring of attention versus self-monitoring of performance: Examining the differential effects among students with emotional disturbance engaged in independent math practice. *Journal of Behavioral Education*, 18(1), 279-299.
- Reid, R., Gonzalez, J. E., Nordness, P. D., Trout, A., & Epstein, M. H. (2004). A meta-analysis of the academic status of students with emotional/ behavioral disturbance. *Journal of Special Education*, 37(3), 130-143.
- Sheffield, K., & Waller, R. J. (2010). A review of single-case studies utilizing self- monitoring interventions to reduce problem classroom behaviors. *Beyond Behavior*, 19(2), 7-13.
- Shulze, M. A. (2016). Self-management strategies to support students with ASD. *Journal of Teaching Exceptional Children*, 48(5), 225-231.
- Smith, B. W., & Sugai, G. (2000). A self-management functional assessment-based behavior support plan for a middle school student with EBD. *Journal of Positive Behavior Interventions*, 2(4), 208–217.
- Stewart, K. G., & McLaughlin, T. F. (1992). Self-recording: Effects of reducing off-task behavior with a high school student with an attention deficit hyperactivity disorder. *Child & Family Behavior Therapy*, 15(4), 53–59.
- Sutherland, K. S., & Singh, N. N. (2004). Learned helplessness and students with emotional or behavioral disorders: Deprivation in the classroom. *Behavioral Disorders*, 29(2), 169-181.
- Turnbull, R., Huerta, N., & Stowe, M. (2006). *The Individuals with Disabilities Education Act as amended in 2004*. Upper Saddle Creek, NJ: Pearson Education.
- Wagner, M. M. (1995). Outcomes for youths with serious emotional disturbance in secondary school and early adulthood. *The Future of Children*, 5(2), 90–112.
- Wood, S. J., & Cronin, M. E. (1999). Students with emotional/behavioral disorders and transition planning: What the follow-up studies tell us. *Psychology in the Schools*, 36(4), 327–345.
- Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson III Tests of Achievement*. Itasca, IL: Riverside.