THE EFFECTS OF VIDEO-BASED SELF-RECORDING OF ON-TASK BEHAVIOR ON THE ON-TASK BEHAVIOR AND ACADEMIC PRODUCTIVITY BY ELEMENTARY STUDENTS WITH SPECIAL NEEDS IN INCLUSIVE CLASSROOMS

A Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctorate of Philosophy in the Graduate School of the Ohio State University

By

Michelle A. Anderson, M.A.

*****

The Ohio State University

2005

Doctoral Examination Committee

Dr. William L. Heward, Advisor

Dr. Jacqueline Wynn

Dr. Nancy A. Neef

Approved By:

________________________________________

Advisor

College of Education
ABSTRACT

The current climate in American schools includes a push for the inclusion of students with disabilities in general education classrooms. In fact, federal legislation mandates that all students with disabilities have meaningful access to the general education curriculum (IDEIA, 2004) and that students with and without disabilities be held equally accountable to the same academic standards (NCLB, 2001). Students with disabilities who stay on-task and maintain reasonable levels of academic productivity during independent work periods are more likely to achieve success in general education placements than are students who do not exhibit those behaviors. Although researchers have developed several strategies for increasing on-task behavior and productivity by students with and without disabilities, these interventions may be underused because they require additional time and resources from the regular education teacher.

Teaching students how to self-manage their behavior offers one solution to this problem. This study examined the effects of video-based self-recording (VBSR) of on-task behavior on the on-task behavior and academic productivity by students with disabilities in general education classrooms. Five first-grade students at an urban charter school participated in the study. Data were collected daily in the regular education classroom during two independent activities in which students were expected to complete teacher assigned worksheets or items on the board.
During the VBSR condition students viewed a 4-minute videotape clip of themselves recorded the day before during independent work period in the regular classroom, at 30-second intervals circled “Yes” or “No” on a self-recording form to indicate whether or not they were on-task, and received points and prizes for increased on-task behavior.

Results demonstrated increases in next day on-task behavior and productivity by all five participants in the setting in which the VBSR intervention occurred. On-task behavior and productivity also increased in the generalization setting for three of four students. Results are discussed in terms of potential functions of VBSR and of the increased on-task behavior and productivity demonstrated by the students following intervention. The findings of this study are also discussed with respect to previous research on self-monitoring and programming for generalization. Limitations of the study and suggestions for practice and future research are addressed.
ACKNOWLEDGMENTS

I would like to thank my advisor, Dr. William Heward for providing endless support, mentoring, and guidance throughout my years at Ohio State. I cannot imagine accomplishing what I have without the benefit of his vast knowledge, words of encouragement, and reminders to have fun along the way. Thank you to my dissertation committee members, Dr. Nancy Neef and Dr. Jacqueline Wynn, for sharing their ideas and support with me over the past three years.

A sincere thank you to the administration at the school where my study took place, as well as the very special teacher whose flexibility and willingness to welcome me into her classroom allowed this study to be possible. I would also thank my participants, whose hard work and enthusiasm made this study so worthwhile. I also appreciate the assistance of those who helped with inter-observer agreement and social validity data collection.

A special thank you and congratulations to the Cohort of `05. What an amazing group of colleagues to work with over the past three years, and more importantly a group of lifelong friends whose support has been invaluable. Finally, a personal thank you to my family, especially my parents, Pritchard and Joyce Anderson and my husband, Joel Hickman. Thank you so much for your love, for supporting my decision to return to school, and for helping me keep things in perspective.
VITA

March 11, 1975 .................................................................Born – North Tonawanda, NY

1998........................................................................B.S. Biology, SUNY College at Cortland

1999........................................................................M.A. Special Education, The Ohio State University

2000-present........................................................Clinic Supervisor, Children’s Hospital Autism Center
                                            Columbus, OH

2002-present........................................................... Graduate Assistant, The Ohio State University

FIELDS OF STUDY

Major Field: Education

Special Education
## TABLE OF CONTENTS

Abstract.......................................................................................................................... ii  
Acknowledgments........................................................................................................ iv  
Vita................................................................................................................................. v  

1. Introduction................................................................................................................... 1  

2. Review of the Literature............................................................................................... 4  
   Inclusion of students with disabilities................................................................. 4  
   Strategies for increasing on-task behaviors......................................................... 7  
   Strategies mediated by others............................................................................. 8  
   Self-mediated strategies.................................................................................... 10  
      Applications to on-task behavior................................................................. 13  
      Self-monitoring of on-task behavior and productivity.............................. 14  
   Summary of strategies for increasing on-task behavior............................... 15  
   Video-based instructional strategies............................................................... 16  
      Using video in instruction......................................................................... 16  
      Video modeling......................................................................................... 17  
      Video feedback and video self-modeling............................................... 20  
   Summary of video-based instruction............................................................... 27  
   Strategies for increasing generalization and maintenance............................. 27  
      Programming common stimuli................................................................. 28  
      Natural contingencies of reinforcement.................................................. 28  
      Indiscriminable contingencies of reinforcement...................................... 29  
   Summary of literature review........................................................................... 30  
   Research questions............................................................................................ 31  

3. Method....................................................................................................................... 33  
   Participants........................................................................................................... 33  
      Selection criteria for participants............................................................... 34  
      Vicky............................................................................................................. 34  
      Isaiah........................................................................................................... 35  
      Daniel.......................................................................................................... 35  
      Evan.............................................................................................................. 36  
      Orion............................................................................................................. 37  
   Setting................................................................................................................... 38  
   Experimenter....................................................................................................... 40
Interobserver agreement and social validity observers ........................................ 42
Definition and measurement of the dependent variable ................................. 42
On-task behavior ............................................................................................ 43

Academic productivity ..................................................................................... 44
Inter-observer agreement ................................................................................ 45
Experimental design .......................................................................................... 46
Materials ........................................................................................................... 47
Procedures .......................................................................................................... 47
Baseline ............................................................................................................. 47
Video-based self-recording .............................................................................. 50
Individual modifications for Isaiah and Orion ............................................... 52
Intermittent video-based self-recording .......................................................... 52
Accuracy of self-recording ............................................................................... 53
Social validity .................................................................................................... 54
Questionnaires .................................................................................................. 54

4. Results ........................................................................................................... 57
Inter-observer agreement ................................................................................ 57
Vicky .................................................................................................................. 57
On-task behavior ............................................................................................... 59
Baseline ............................................................................................................. 59
Video-based self-recording of seatwork ......................................................... 59
Video-based self-recording of boardwork ....................................................... 59
Academic productivity ...................................................................................... 61
Baseline ............................................................................................................. 61
Video-based self-recording of seatwork ......................................................... 61
Video-based self-recording of boardwork ....................................................... 61
Intermittent video-based self-recording .......................................................... 63
Summary ............................................................................................................ 63
Isaiah .................................................................................................................. 64
On-task behavior ............................................................................................... 64
Baseline ............................................................................................................. 64
Video-based self-recording of boardwork ....................................................... 64
Academic productivity ...................................................................................... 66
Baseline ............................................................................................................. 66
Video-based self-recording of boardwork ....................................................... 66
Summary ............................................................................................................ 66
Daniel .................................................................................................................. 68
On-task behavior ............................................................................................... 68
Baseline ............................................................................................................. 68
Video-based self-recording of boardwork ....................................................... 68
Video-based self-recording of seatwork ........................................... 70
Academic productivity ................................................................. 70
Baseline ....................................................................................... 70
Video-based self-recording of boardwork ...................................... 70
Video-based self-recording of seatwork ........................................ 72
Intermittent video-based self-recording ........................................ 72
Summary ..................................................................................... 72
Evan ............................................................................................. 73
On-task behavior .......................................................................... 73
Baseline ....................................................................................... 73
Video-based self-recording of seatwork ........................................ 73
Academic productivity ................................................................. 75
Baseline ....................................................................................... 75
Video-based self-recording of seatwork ........................................ 75
Summary ..................................................................................... 75
Orion ............................................................................................ 77
On-task behavior .......................................................................... 77
Baseline ....................................................................................... 77
Video-based self-recording of seatwork ........................................ 77
Academic productivity ................................................................. 77
Baseline ....................................................................................... 77
Video-based self-recording of seatwork ........................................ 80
Summary ..................................................................................... 80
Group summary of results ............................................................ 80
Social validity ............................................................................... 86
Student opinions .......................................................................... 86
Teacher opinions .......................................................................... 86
Classroom teacher survey ............................................................ 86
Ratings of participants by current and future teachers .................. 88

5. Discussion ................................................................................. 90
Limitations of the study ............................................................... 90
Participant characteristics ............................................................ 90
Teacher ......................................................................................... 90
Students ....................................................................................... 91
Duration of study ......................................................................... 92
Treatment package ....................................................................... 93
Generalization measures ............................................................. 93
Research questions ...................................................................... 94
Research question 1 ................................................................. 94
Research question 2 .................................................................... 96
Research question 3 ................................................................. 97
Research question 4 ................................................................. 99
Research question 5 ................................................................. 100
Research question 6................................................................. 101
Implications for practice.......................................................... 102
Suggestions for future research.................................................. 105
  Generalization and maintenance............................................. 105
  Components of the intervention package.................................. 108
Student characteristics............................................................. 109
Reinforcer assessment.............................................................. 110
Functional assessment............................................................. 111
Accuracy of self-recording....................................................... 112
Additional target behaviors..................................................... 113
Summary of research findings.................................................. 114

List of references........................................................................ 115

Appendices................................................................................ 119
  A: Parent information letter and consent form for participants........ 119
  B: Parent information letter and consent form for videotaping......... 123
  C: Teacher and aide consent form for videotaping........................ 126
  D: Consent form for participation in social validity questionnaire..... 129
  E: Samples of seatwork by all participants.................................. 131
  F: Samples of boardwork by all participants................................. 137
  G: Data sheets........................................................................ 142
  H: Self-recording sheets........................................................... 145
  I: Star chart............................................................................ 148
  J: Training script for teaching self-monitoring............................. 150
  K: Social validity questionnaires for teacher................................. 153
  L: Social validity questionnaires for participants.......................... 155
  M: Social validity form for viewing of video clips......................... 157
LIST OF TABLES

3.1 Demographic data for participants.................................................................39
4.1 Interobserver agreement across dependent variables.................................58
4.2 Mean and range of on-task behavior by all students......................................81
4.3 Mean and range of academic productivity by all students..........................84
4.4 Student responses to social validity questions...............................................87
4.5 Mean, range, and mode of video clip ratings of social validity....................89
LIST OF FIGURES

3.1 Layout of general education classroom ..................................................41

4.1 On-task behavior by Vicky .................................................................60

4.2 Academic productivity by Vicky .........................................................62

4.3 On-task behavior by Isaiah ...............................................................65

4.4 Academic productivity by Isaiah .......................................................67

4.5 On-task behavior by Daniel .............................................................69

4.6 Academic productivity by Daniel .....................................................71

4.7 On-task behavior by Evan ...............................................................74

4.8 Academic productivity by Evan .......................................................76

4.9 On-task behavior by Orion ..............................................................78

4.10 Academic productivity by Orion .....................................................79

4.11 On-task behavior by all students ....................................................82

4.12 Productivity by all students ..........................................................85

4.13 Social validity ratings of student behavior for all participants .............89
CHAPTER 1

INTRODUCTION

The current climate in American schools includes a push for the inclusion of students with disabilities in general education classrooms. In fact, federal regulations mandate that all students with disabilities have meaningful access to the general education curriculum (IDEA, 1999) and that students with and without disabilities be held equally accountable to the same academic standards (No Child Left Behind Act, 2000). These mandates mean that students with special needs are now expected to be exposed to the regular education curriculum. Most of these students are also required to show the same level of mastery of this information as students without special needs, as shown by their performance on standardized tests. Because students with disabilities are also guaranteed an education in the least restrictive environment (IDEA, 1999) many of these students are exposed to the general education curriculum through their inclusion in the general education classroom. Without adequate supports students with disabilities may not be able to master the general education curriculum.

Children with disabilities who have a difficult time attending or responding to teacher instructions, and those who cannot independently complete assignments may have problems successfully accessing the general education curriculum. Children with communication delays, as in those seen in children diagnosed with autism may have greater difficulties in these areas. In addition, teachers may have negative reactions to
students, with and without disabilities, who cannot work independently without engaging in inappropriate behaviors. Therefore, it is important for teachers to have access to evidence-based interventions that can be used to help these students.

Recently professionals in the field of special education have emphasized the importance of using interventions that improve the self-determination of people with disabilities (e.g., Hasazi, Furney, & DeStefano, 1999; Eisenman & Chamberlain, 2001; Field, Martin, Miller, Ward, & Wehmeyer, 1998). Definitions of self-determination typically include behaviors such as choice making; problem-solving; goal setting and attainment; self-advocacy; self-efficacy; self-knowledge and understanding; self-observation, evaluation, and reinforcement; independence, risk taking, and safety; and internal locus of control (Karvonen, Test, Wood, Browder, & Algozzine, 2004).

Interventions such as those based on self-monitoring strategies offer students the opportunity to set and attain goals; increase self-knowledge; participate in self-observation; evaluation, and reinforcement, and increase their independence. Teaching children to self-monitor gives teachers a strategy for increasing specific target behaviors without having to closely supervise the target students while teaching students a valuable tool for self-evaluation that can be used in other settings and can lead to increased independence.

*Purpose of Study*

The purpose of this study was to evaluate the effects of video-based self-recording of on-task behavior on next day on-task behavior and academic productivity by
elementary school students with disabilities included in a regular education classroom. Each participant was recorded during several independent classroom activities.

The students were videotaped during independent academic activities at various points in the school day. All occurrences of the targeted activity time were videotaped but only one occurrence was selected to be viewed by the students. Any other occurrences were used by the experimenter for the collection of generalization data. The students watched and scored approximately 4 minutes of their video each day. Students scored their behavior as on-task or off-task and received rewards for achieving a predetermined number of “on-task” intervals.

The study added to the literature by extending the use of video-based self-recording to the on-task behavior of young students with disabilities who were included in a regular education classroom. The effects of this intervention on academic productivity were also measured. In addition, generalization to other settings was specifically measured and intervention was applied for two students to increase on-task behavior in the generalization setting. Procedures were used to increase the likelihood of maintenance of the increased levels of on-task behavior and productivity.
CHAPTER 2

REVIEW OF THE LITERATURE

Inclusion of Students with Disabilities

The inclusion of students with disabilities into general education classrooms has spurred investigations into teacher opinions about these students and teacher behavior toward included students. Studies have been conducted in an attempt to identify stressors related to inclusion (Forlin, 2001), determine teachers’ “comfort zones” with students with disabilities (Buysse, Wesley, Keyes, & Bailey, 1996), and describe interactions between students with disabilities and their general education teachers (Robertston, Chamberlain, & Kasari, 2003). Studies such as these highlight the barriers to successful inclusion in terms of teacher perceptions and behaviors about and toward students with special needs. They also illustrate specific behaviors by children with or without disabilities that correlate highly with poor ratings by teacher and increased teacher stress.

Buysse and colleagues (1996) interviewed 52 teachers regarding their level of comfort with young children with various disabilities and inappropriate behaviors. The interviews determined that the majority of teachers were uncomfortable with students with more severe disabilities and with students who displayed aggressive and noncompliant behaviors. Teachers stated that they would prefer not to have such students in their classrooms and that those students had a negative impact on the teacher and other
students. The authors of the study proposed that teachers should not be required to have students they are uncomfortable with in their classrooms. This lack of comfort, and the authors’ view that teachers should not be forced to overcome their discomfort, illustrate some of the difficulties parents and special educators face when trying to find a successful inclusion placement for their students with special needs. In addition, it highlights the level of anxiety felt by some general classroom educators when faced with the prospect of including students with disabilities in their classrooms and illustrates the behavioral difficulties that make this prospect the most stressful.

In a related study, 571 general education teachers were interviewed to determine the specific stressors that teachers face due to the inclusion of students with special needs in the general education classroom (Forlin, 2001). In this investigation, teachers reported that most stressful aspects of including a student with disabilities in their classroom were related to teacher competence and student behavior. For example, teachers worried that they would be unable to monitor other students while attending to the child with special needs and as a result be less effective at teaching the other children. Areas of concern related to student behavior included fear that the child with disabilities would physically harm other students and distract other students from their work. The teachers also expressed concern that they would be unable to maintain an active learning environment for the student with disabilities.

Students who display inappropriate behaviors, such as aggression, insubordination, refusals to do work, talking to peers, and noncompliance may have a more difficult time forming positive relationships with their teachers. In addition, for
typically developing children, relationships with teachers tend to predict subsequent peer
relationships. This combination of factors may lead to strained relations between a child
with a disability and his general education teacher and peers.

A study by Roberston, Chamberlain, & Kasari (2003) investigated the
relationship between the behavior of students with autism spectrum disorders and the
interactions between the student and his/her general education teacher and peers. This
study examined the role of paraprofessionals in the inclusion of students with autism.
The authors found that paraprofessionals were responsible for assisting the student with
autism to stay on-task and focused and to reduce inappropriate and disruptive behaviors
by the student. Measures of student behavior and student/teacher interactions were also
analyzed to determine relationships between the two factors. Analysis revealed a positive
correlation between the behaviors of inattention, hyperactivity, and opposition/defiance
and teacher relationships characterized as full of conflict. In addition, hyperactivity and
opposition/defiance correlated highly with ratings of dependent relationships, based on
the observations of teacher/student interactions. Inattentive behaviors negatively
correlated with teachers’ ratings of closeness toward the student. A positive correlation
was also found between the positive nature of the interactions between the student with a
disability and the teacher and the student’s level of inclusion within the classroom as
reported by other students. A high negative correlation was also found between
inattentive behaviors and level of social inclusion as reported by peers. These findings
indicate the lack of independence of many students with autism (illustrated by the role of
the paraprofessional) and the importance of reducing inappropriate behaviors such as inattentiveness for the successful academic and social inclusion of students with autism.

The effects of specific student characteristics on teachers’ predictions of student success were examined by (Tournaki and Podell, 2005). The authors surveyed 384 teachers of elementary and middle school students in New York City. The teachers were presented with case studies of students ranging from cooperative, attentive students with no reading problems to those who were uncooperative, inattentive and had a specific learning disability and below grade reading ability and asked to rate each of the students in terms of perceived academic and social success in school.

Overall, teachers rated less attentive students as less likely to be successful in school. The combined effects of reading ability and attentiveness and cooperativeness were also evaluated. The impact of low attentiveness on teachers’ opinions of school success was exacerbated by low reading ability. For students who had average reading ability there was still a slight positive correlation between attentiveness and success but the correlation was much stronger for students who had reading difficulties. In addition to low ratings for projected academic success, inattentive or uncooperative students were also rated as less likely to be successful in areas of social behavior.

Strategies for Increasing On-Task Behavior

Results of the studies discussed in the previous section consistently point to off-task behavior (which could be characterized as inattention and/or uncooperative behavior) as a key stressor for teachers of students with and without disabilities. In addition, teachers expect that students who display off-task behavior will be less
academically and socially successful. Therefore, in order to successfully provide students with an appropriate education in their least restrictive environment, evidence based strategies for increasing on-task behavior must be examined and utilized.

There is a wide array of evidence-based strategies for increasing on-task behavior available to teachers. These strategies can be separated into different categories by a variety of characteristics. One way to classify these strategies is according to who delivers the intervention. For example, in token economies teachers reward appropriate student behavior by handing out tokens, or awarding points, that can later be exchanged for back-up reinforcers. A second type of intervention is one in which the student is in charge of the intervention and/or delivery of reinforcement. These strategies are characterized as self-management interventions.

*Strategies Mediated by Others*

Within the classification of teacher or peer mediated strategies there are many specific interventions that have proven to effectively increase on-task behavior in students with and without disabilities. Many of these strategies rely on the principle of positive reinforcement. One example of a teacher-mediated strategy involving reinforcement is the “Good Behavior Game.” Several studies have shown the positive effects of using this game on the on-task behavior of students during independent work (e.g., Babyak, Luze, and Kamps, 2000; Embry, 2002; Saigh and Umar, 1983). The good behavior game involves dividing students into teams and rewarding teams when everyone in that group is doing their work. Teams earn points that can be used to “buy” rewards or that are used in a competition with the other team in the classroom.
Disruptive behavior and independent work skills have also been targeted in studies evaluating the effectiveness of token reinforcement systems and response cost. Two studies evaluated the effectiveness of these procedures in students with ADHD (McGoey & DuPaul, 2000) and children with autism (Pelios, MacDuff, & Axelrod, 2003). Both of these studies demonstrated the usefulness of response cost and token reinforcement in increasing appropriate behaviors. The Pelios, MacDuff, and Axelrod study also incorporated delayed reinforcement and unpredictable supervision to improve generalization of behavior gains.

Although each of these studies reported educationally significant gains students’ independent work skills, they all require monitoring, attention, and effort by the general education teacher. As noted previously, one stressor for teachers in inclusive classrooms is that they worry that the student with special needs will require so much extra time and effort as to negatively affect the other students in the classroom. One study attempted to decrease the teacher effort required to distribute reinforcers by using an automatic reinforcement device that automatically accumulated points when a student was on-task and took points away from the student when he was off-task (Evans, Ferre, Ford, & Green, 1995). Although the device kept track of the points, therefore reducing teacher workload, the teacher was the one who controlled the device (i.e. she pressed a button to begin response cost when she noticed that the student was off-task). A functional relationship was demonstrated between use of the device and on-task behavior.

In addition to the delivery of tangible reinforcers, various other teacher-mediated strategies have shown to be effective at increasing on-task behavior. In one study,
instruction in personal accountability and responsibility was followed up with public posting of students’ on-task and “sportsmanship” behaviors (Balderson & Sharpe, 2005). The combination of direct instruction and public posting resulted in increased levels of on-task behavior and reduced levels of teacher prompting. Another study by Fusilier, Dubard, and Elliott (2005) showed that teacher proximity could function to reduce on-task behavior in a student with autism. In this study, the classroom teacher altered her proximity to the student during independent work activities and the effects on the student’s on-task behavior were observed. The authors found that the student was more on-task when the teacher moved away from the student and less on-task when the teacher stood close to the student.

In a study by Flood, Wilder, Flood, and Masuda (2002) peers provided attention to students with ADHD contingent on on-task behavior. As soon as the target students began engaging in off-task behavior, the peer removed attention. This use of peer-mediated reinforcement resulted in increased levels of on-task behavior by the students with ADHD.

*Self-Mediated Strategies*

Although the strategies described in the previous section proved to be effective at increasing on-task and appropriate classroom behaviors, each requires the teacher to be in charge of the intervention which can be problematic for several reasons. First, as mentioned previously, the students may be in a learning environment in which the teacher is not available to provide prompts and/or reinforcement (e.g. the teacher may be working with a reading group while the rest of the class is expected to work independently). A
second potential problem is that these interventions leave the teacher to decide when and how the procedures will be followed (outside of the strict requirements of a research study). Teachers may forget to carry out the procedures, may decide they are too much work, or the student might change classes to a teacher that is unwilling to continue the intervention. Finally, the student has little ownership over the intervention – he is dependent on the teacher to notice and reward his behavior.

One solution to these problems is to use an intervention managed by the student. Self-monitoring is one example of this type of procedure that has been used to increase many behaviors, including on-task and independent work behaviors. Self-monitoring is a type of self-management that involves an individual observing whether he/she has engaged in a specific behavior and then recording the occurrence or non-occurrence of that behavior (Nelson & Hayes, 1981). In self-monitoring the student is responsible for tracking his own behavior, whether or not a teacher is present.

Many investigators have studied the effects of self-monitoring on the behaviors of students with and without disabilities (e.g., Blick & Test, 1987; Prater, Joy, Chillman, Temple, & Miller, 1991; Rock, 2005; Ueki, 2004). These studies students self-monitor their ongoing behavior in the classroom using some form of a self-management checklist. Most of these studies have been conducted with older students (upper elementary school to high school), many with learning disabilities, mild mental retardation, and emotional/behavioral disorders. The self-monitoring often involves using some sort of checklist and typically occurs as the behavior happens. This means that students are typically recording their behavior, as it happens, during ongoing classroom activities.
Behaviors targeted for change in the self-monitoring literature range from on-task classroom behavior (e.g., Mithaug, 2004) to employee training (Decker, 1983) and theatrical performances (Lan & Morgan, 2003). Self-monitoring has also been used by young children with autism to decrease inappropriate vocalizations (Mancina, Tankersly, Kamps, Kravits, & Parrett, 2000) and increase appropriate toy play in an unsupervised environment (Stahmer & Schreibman, 1992).

The study by Stahmer and Schreibman highlights two important advantages of self-monitoring procedures: it can be used to increase independent responding and can be a tool for increasing generalization of newly acquired behaviors to unsupervised environments. In the first phase of this study, children were taught to discriminate between appropriate and inappropriate play with specific toys. Once they were able to make this discrimination, the participants were taught to self-monitor their own play with those toys. Children were taught to use a timer as a cue for self-monitoring. Each time the timer sounded, the student made an “X” in a box on a self-recording form if they had been playing appropriately since the previous monitoring interval. Reinforcement in the form of continued access to preferred activities and toys was provided for appropriate play accompanied by accurate self-monitoring. The self-monitoring skills were initially taught with the experimenter in the room. Once the children were playing appropriately, and monitoring their behavior accurately, the experimenter presence was faded from the room. Frequency of checks and reinforcement were also faded over time. The children achieved and maintained high levels of appropriate play as a result of the self-monitoring training.
Applications to on-task behavior. There is a body of research that also supports the use of self-monitoring to increase on-task behavior. This intervention can be especially helpful when the target behavior needs to occur at a time when teacher supervision is minimal. The use of self-monitoring for increasing appropriate behavior during independent seat work was demonstrated in a study by McCarl, Svobodny, and Baere (1991). In this study, three 9-11 year old girls with mild to moderate disabilities were taught to self-monitor their on-task behavior. During independent seatwork in a self-contained classroom self-monitoring was used to increase on-task behavior. During this time of class, a tone sounded at variable intervals. The girls had been taught to ask themselves, “Am I working?” and then to record a “Y” or “N” on a form that stayed on their desk, each time the tone sounded. The results showed that all three girls were more on-task as a result of self-monitoring and two of the three girls produced more academic work during self-monitoring. The results of this study show that self-monitoring can potentially be a powerful tool for increasing independent responding of children with disabilities.

Several other studies have investigated the use of self-monitoring to increase on-task behavior with students from a wide range of age and disability groups. Brooks, Todd, Tofflemoyer, and Horner (2003) taught a 10-year-old girl with Down syndrome to self-monitor her academic engagement. Prior to intervention, a functional assessment was done and from the results the experimenters hypothesized that Vicky’s off-task behavior was maintained by teacher and peer attention. To individualize the self-monitoring intervention to meet her specific needs, the experimenters included a
“recruitment of teacher attention” aspect to the self-monitoring form. After the participant completed a pre-determined number of monitoring intervals, a picture prompted her to raise her hand for teacher feedback.

Rock (2005) used a self-management package to teach 2nd-4th grade students to self-monitor their academic engagement. The students ranged in disability level from Asperger syndrome, to children with ADHD and students with no disabilities. As in the Brooks et. al. study, all of the students in this study displayed increased levels of on-task behavior following the introduction of the self-monitoring intervention. The participants in both of these studies also showed an increase in productivity, although productivity was not targeted through the self-monitoring intervention.

Self-monitoring of on-task behavior versus academic productivity. Several studies have investigated the relative benefits of self-monitoring on-task behavior, academic productivity, and/or accuracy. Maag, Reid, and DiGangi (1993) taught six elementary aged students to self-monitor on-task behavior, academic productivity, and accuracy, one at a time. Improvements were seen in all three types of behavior, regardless of the type of self-monitoring used. However, academic improvement was the most significant for fourth graders when they self-monitored productivity and for sixth graders when the self-monitored accuracy. Students younger than fourth grade were not targeted in this study.

Reid and Harris (1993) compared the effects of self-monitoring of attention versus self-monitoring of performance with 28 students with learning disabilities. In addition to the self-monitoring procedures, a spelling study procedure was used in this
study. Based on the outcomes of their study the authors determined that there may not be a “best” method of self-monitoring for all students on all tasks. Factors that may affect the outcomes of specific types of self-monitoring may include the age and disability level of the student and the maintaining contingencies for the inappropriate behavior.

**Summary of Self-monitoring Literature**

Self-monitoring has been widely investigated as a means for increasing on-task and appropriate behaviors by children in classroom settings. The majority of these studies demonstrate that self-monitoring is an effective intervention that can be used with students of various ages and ability levels. Self-monitoring successfully increases the on-task behavior of students with disabilities and does not add many additional demands to the general education teacher. Some debate exists over the “best” skill to target in self-monitoring related to on-task behavior. Some studies have demonstrated a functional relationship between self-monitoring on-task behavior and student productivity. Other investigations have found that in order to increase productivity, students must self-monitor their productivity directly. A student can be very productive and still engage in off-task or disruptive behaviors or can meet the definition of “on-task” and have no disruptive behavior yet get very little work completed. For this reason, it may be that the skill targeted for self-monitoring needs to be individualized.

Generalization and maintenance of self-monitoring, and the self-monitored behavior has often not been measured in several of the studies described in this section (e.g., Rock, 2005), and when it has results have been mixed. Among studies that measured generalization of the self-monitored behaviors to other settings, generalization
was only demonstrated in one of the five studies described in the previous section (Wood, Murdock, & Cronin, 2002). In this study it was found that training was required in three separate settings before generalization was seen to novel settings. Maintenance of the self-monitored behavior was not specifically measured in any of the studies described in this section. However, short-term maintenance is lacking in the studies that used a reversal design and demonstrated that removal of the intervention resulted in a return to baseline levels of behavior (e.g., Brooks, Todd, Tofflemoyer, & Horner, 2003). None of the studies addressed or reported the extent to which the skill of self-monitoring generalized to other settings or maintained following the termination of intervention.

Video Based Instructional Strategies

Using Video in Instruction

Since the 1970’s videotaping has been used as a means for instruction, prompting, modeling, and self-recording to teach or improve skills in a variety of settings (e.g., Creer & Miklich, 1970). Recently, video-based instruction has been used to teach a variety of skills including athletic skills to typically functioning adults (e.g., Guadagnoli, Holcomb, & Davis, 2002), cooking skills to adults with disabilities (Graves, Collins, Schuster, & Kleinert, 2005), and community living skills to adults with disabilities (e.g., Mechling, Pndgen, & Cronin, 2005).

In the study by Guadagnoli, Holcomb, and Davis (2002), a group of golfers were split into three groups; one receiving instruction from a teacher, one receiving instruction from a teacher plus video instruction, and one practicing on their own. The group that received instruction from a teacher and video showed the greatest gains in the same
amount of time. The other two studies involved the use of video based instruction to teach adults with moderate to severe disabilities to prepare their own meals (Graves, Collins, Schuster, & Kleinert, 2005) and to order food from, and answer questions at a fast food restaurant (Mechling, Pndgen, & Cronin, 2005).

In addition to video based instruction, video modeling and video feedback have been used to teach skills to people with and without disabilities. Video modeling involves watching oneself or another person correctly perform a skill that is being targeted. In video feedback, participants watch themselves on video performing a targeted skill at their current level and in some cases self-monitor their behavior in the video or receive feedback from a teacher or expert in the field. A recent review of the literature found that in the last 15 years there have been 15 video-based studies within the field of autism alone (Ayres & Langone, 2005). These procedures in these studies investigated the effectiveness of video modeling, video-based instruction, or video feedback at increasing a variety of social and functional/academic behaviors.

**Video Modeling**

Video modeling has been used to teach a variety of skills including academics, appropriate behavior, and social skills. Reviews of the literature have been published on the use of video-modeling in the schools (Hitchcock, Dowrick, & Prater, 2003) and the use of video-based interventions, including video modeling with students with autism (Ayres & Langone, 2005). In video modeling, participants watch themselves or others correctly performing a targeted skill. They do not see incorrect performance of the skill and they do not rate the performances seen on the video.
In a review of the literature on using video-based strategies with children with autism, Ayres and Lagone (2005) found eight studies that used video modeling as the independent variable. All of the studies involved participants with autism and their ages ranged from 4 to 15-years-old. Skills targeted in these studies included social skills (labeling emotions, cooperative play, conversation skills, sharing, greeting others, spontaneous requesting, and commenting during play) and functional skills (grocery shopping, washing hands, purchasing skills, shaving, making lunch, making beds, cleaning glasses, mailing a letter, pet care, and setting a table).

Only one of the eight studies (Sherer, Pierce, Paredes, Kisacky, Ingersoll, & Schreibman, 2001) involved the participants watching video of themselves. The remaining studies used videos of others (e.g., siblings, teachers, unknown children and adults) performing the target behavior. Two of the eight studies reported minimal change in the dependent variable following the introduction of video modeling, including the one study that involved video self-modeling (Sherer, Pierce, Paredes, Kisacky, Ingersoll, & Schreibman, 2001), while six of the studies reported significant improvements in the targeted skill. One study did not measure generalization (Simpson, Langone, & Ayres, 2004), one showed minimal generalization across settings (Theimann & Goldstein, 2001), and the remaining six studies reported generalization of targeted skills across settings (although some were anecdotal reports and not directly measured).

Hitchcock, Dowrick, and Prater, (2003) reviewed 16 video modeling studies conducted in school-based settings during the period of 1978-2000. Participants in these studies ranged in age from 3 to 17-years and had a variety of disabilities including
nondisabled children, specific learning disabilities, and behavior disorders, selective
mutism, cognitive and language delays, ADHD, and stuttering. Target behaviors in these
studies varied, and included skills such as stuttering, pronunciation, on-task behavior,
fighting, reading fluency, hand raising, requesting, disruptive behavior, vocalizations, and
math achievement. Two of the studies investigated on-task behavior and found positive
results following intervention (Clare, Jenson, Kehle, & Bray, 2000; Walker & Clement,
1992). Although maintenance measures showed positive outcomes, generalization to
novel settings was mixed (with two of three participants showing generalization in one
study and none of the participants showing generalization in the other).

Two studies have used video modeling plus a self-monitoring component to teach
skills to students with disabilities (Apple, Billingsley, & Schwartz, 2005; Coyle & Cole,
2004). Apple and colleagues conducted two experiments to investigate the effectiveness
of video modeling plus reinforcement and video modeling and self-monitoring to teach 5-
year-old boys to give compliments to their peers. The videos showed classroom peers
giving compliments to each other in an appropriate manner. In the video modeling only
phase, the students acquired and maintained giving compliments to peers in response to a
peer initiations (e.g. a peer says “Look at my drawing!” and the target child responds
with, “Wow, that is a great drawing!”) Although compliment initiations were also
modeled in the videos, they were acquired to a lower degree and did not maintain as well
as the response compliments following the removal of contrived reinforcement.

In the second experiment, students were taught the same responses as in the
previous experiment but a self-monitoring component was added for initiations. The
participants continued to view videos of their peers giving compliments. They were then given a self-recording form with spaces for two marks. Each time a participant initiated giving a compliment he or she made a mark on the form (up to two). The video modeling and contrived reinforcement were then faded and the participants’ initiations maintained at two compliment initiations per 15-minute observation setting. This use of self-monitoring helped to increase the maintenance of the newly acquired skills in the absence of continued instruction and contrived reinforcement.

In the study by Coyle and Cole (2004), off-task behavior of three students with autism was reduced using video modeling (where each child served as his own model) and self-monitoring while in the classroom. Each day the students went to the special education classroom and watched a video segment of themselves remaining on-task during an independent classroom activity from the day before. The researcher would comment on the student’s appropriate behavior and point out what they were doing correctly (e.g., “You are doing a great job staying on-task!”). The students then went into the classroom for that day’s independent work. During the independent work period students self-monitored their on-task behavior on 30-second intervals (using beep tapes and a score card). Off-task behavior for all three students was dramatically reduced and follow-up data from 2-weeks post intervention showed short term maintenance of the gains.

*Video Feedback and Video Self-Monitoring*

Video modeling involves participants viewing videos of themselves or others engaging in the appropriate behavior targeted for improvement. The use of video
feedback and video-based self-monitoring differs from video modeling in that, in video feedback, participants only watch videos of themselves and they watch videos of how they actually performed – so typically both examples and non-examples of the target behavior are observed. In addition, participants often receive feedback from another person on their performance, or they rate their own performance through the use of self-monitoring. However, unlike the studies that combined video modeling and self-monitoring, in video feedback the self-monitoring occurs while the participant is watching the video, not while they are in the instructional environment. Video feedback has been used to teach a wide variety of skills (e.g., medical skills, communication skills, employee training, public speaking, and social skills) to an equally wide variety of participants (e.g., medical students, managers in training, people with obsessive compulsive disorder (OCD), students with autism, and students with behavior disorders).

Two studies have investigated the effects of video feedback on the skills of medical students and residents. In a study by Backstein, Agnidis, Regehr, and Reznick (2004), medical students were videotaped during the acquisition of orthopedic technical skills. The students were split into three groups and received either no video feedback (this group was still videotaped), video feedback alone (where the students watched video of themselves but did not self-monitor and did not receive feedback from others), and video feedback with the help of an expert who gave feedback on the student’s video. The results of this study showed no significant differences in acquisition for the students with or without video feedback.
Roter, Larson, Shintzky, Chernoff, Serwint, Adamo, and Wissow (2004) investigated the effects of a video feedback technique on the communication skills of first-year medical residents. The residents were videotaped during an interview with a mock patient. The researchers then coded the student’s interview according to specific communication skills (e.g., listening more than talking, responding to parent’s emotions). The coding of the interview was then embedded onto the video and made into a CD-ROM. The residents watched their own videos with the embedded feedback. Residents then participated in a second interview (with different patients in a slightly different scenario) and were re-scored. Scores on videos from the second interviews for all 28 participants increased significantly in all of the communication skills areas.

The effects of video feedback and group size on the employee training skills of business school students were investigated by Decker (1983). In this study, 36 students were randomly split into three groups that each received one of the following treatments: one observer/video feedback, large group/video feedback, one observer/no video feedback. The investigator found that having only one person observe and using video feedback resulted in the greatest outcome. The behavior that was being targeted in this study was the participant teaching a mock employee an on-the-job skill.

Video feedback has also been used to help people with psychiatric disorders such as anxiety and obsessive-compulsive disorder (OCD). People with OCD often realize that some of their behaviors are not functional but may think other behaviors that meet the definition as a symptom of OCD are functional. When patients do not realize that a behavior is the result of their OCD, they are less willing to make changes to that
behavior. Foltys and Trabert (1996) showed that viewing videos of their behavior helped these patients realize the symptomatic nature of these behaviors. Viewing of the videos without therapist comment led to changed perception by the patient and further viewing with therapist comment increased awareness even more. Rodebaugh and Chambless (2002) used video feedback to increase the skills and reduce the anxiety levels of speech anxious undergraduate students. They found that video feedback (the students viewed videos of themselves making a speech) decreased the students’ anxiety level about future speeches. This effect was especially true for individuals who consistently underrated their first speech prior to watching the video.

Video feedback with self-monitoring has been used to improve the theatre skills of young children in a theatre program and a group of children preparing for a Christmas play (Lan & Morgan, 2003). In one investigation, children were divided into a video feedback and no video feedback groups. Both groups of children were taped during rehearsals but only the video feedback group viewed their videos at the end of each rehearsal. The group that viewed their tapes had significantly higher skill levels at the end of the acting program as rated by professionals in the field with no knowledge of the study’s purpose. In the second investigation, children preparing for a Christmas play were split into two groups – general self monitoring and focused self monitoring. In this study, both groups watched tapes of themselves following each rehearsal but only the focused group was given specific aspects of their acting to focus on during the viewings. The focused group outperformed the general group during the actual production of the play as judged by experts in the field.
Video feedback has also been used successfully with students with disabilities (e.g., Theimann & Goldstein, 2001; Walther & Beare, 1991). Most of the studies involving children with disabilities as participants have shown the effects of video feedback on social skills. Targeted skills include appropriate social behaviors, initiating interactions, and securing attention. Participants in these studies have been mostly older elementary and middle and high school students with various disabilities including emotional and behavior disabilities, mental retardation, and autism.

Several studies have investigated the effects of video feedback intervention packages on a variety of social behaviors by children with disabilities. In one study, five 11-13 year old boys with behavioral and emotional challenges were taught to view and evaluate videos of themselves playing with other children (Kern-Dunlap, Dunlap, Clarke, Childs, White, & Stewart, 1992). The students watched a video from the day before. Every 30 seconds the video was stopped and the child was asked to respond to the statement, “I had desirable peer interactions” by circling “yes” or “no” on a self-monitoring form. Behaviors measured in this study varied by participant and included defiance, self abuse, inattention, withdrawal, and aggression.

All five participants demonstrated higher percentages of appropriate interaction and lower percentages of inappropriate interaction during video-feedback when compared to their baseline rates. The total number of interactions tended to stay the same for all children throughout the study. The results of this study demonstrate the potential effectiveness of using video feedback to increase positive social interactions among students with emotional and behavioral disabilities. However, no attempt was made to
remove the video feedback intervention and generalization data were not collected so it is unknown whether or not the changes in behavior maintained over time or extended to other settings.

In a study by Theimann and Goldstein (2001), 5 boys with autism (ranging in age from 6-12 years) were targeted for participation. The boys all showed impaired social communication, emerging or acquired word identification skills, functional verbal communication, and full or partial inclusion in general education. Sessions occurred in a separate room with the target child and two peers from the child’s classroom. Sessions consisted of structured teaching, engagement in a social activity, and self-evaluation using video feedback. Data were collected for appropriate contingent responses, securing attention, initiating comments, initiating requests, inappropriate topic changes, unintelligible speech, and non-responsiveness. Each behavior was targeted one at a time for self-evaluation. The students were given a pictorial and written prompt card for the targeted behavior to which they referred while watching the video. Self-recording was done in the same manner as in the Kern-Dunpal, et.al (1992) study. The results showed that each appropriate behavior increased as it was targeted during the video feedback phase. However, mixed results were found with regard to maintenance. For some children, the previously acquired behavior reduced to near baseline levels when a new behavior was targeted. In addition, even with the inclusion of the pictorial and written prompts in the classroom, little to no generalization across settings was observed.

The effects of video feedback intervention packages on the social behavior of youth with mild disabilities were evaluated in two studies by Embregts (2002 & 2003).
In the first study, five boys ranging in age from 14-17 were targeted for intervention. The boys were diagnosed with one of the following disorders: attention deficit hyperactivity disorder, pervasive developmental disorder, or conduct disorder. Behaviors targeted for this study included threats, insults, shouting, pushing, and hitting. In addition, appropriate behaviors were operationally defined. Participants were videotaped during meals and their rates of appropriate and inappropriate behaviors were recorded. During intervention, each participant met with the experimenter two times per week for 30 minutes each session. During these sessions, videos were randomly selected for viewing from the previous week’s mealtimes. The participants were taught to score their behavior as appropriate or inappropriate. They watched the video with the experimenter and scored their behavior at 30-second intervals. The participants earned tokens for accurate self-recording and could later exchange the tokens for pre-selected rewards.

Analysis of the data collected from this study shows mixed results for the effectiveness of the video feedback intervention package. None of the participants’ data showed a clear reversal of levels of inappropriate behavior between phases. However, all participants showed a significant decrease by the end of the study. It is difficult to determine if the behaviors would have gone down without intervention, or if there was no return to baseline levels due to maintenance of the behavior change. Similar patterns were seen for increases in appropriate behaviors in that all students ended with higher rates of appropriate behavior but a functional relationship can only be clearly observed in one participant’s data. In addition, no data were collected on maintenance or generalization of the targeted behaviors.
Summary of Video-Based Instruction

Procedures that can effectively increase a student’s appropriate behaviors during class are needed to improve the success rate of inclusion practices. Strategies that decrease the responsibilities of the general education teacher have special importance because they may help improve the general educator’s view of inclusion and allow him or her more time to teach all of his or her students. In addition, procedures which allow the student to observe and evaluate his/her own behavior may lead to improved self-determination. Although video feedback packages are a more recent application of self-management, the current research seems to support their use to improve student behavior. Potential advantages of using the delayed self-monitoring involved in video feedback include the ability to use the system with students who are easily distracted with self-management materials during ongoing instruction and the ability of a special education teacher to intervene on behaviors in the general education classroom through the use of an intervention outside of the class. The delay in evaluation may also allow children to more objectively evaluate their own behavior by removing it from the immediate context and also provides permanent evidence of a behavior which may reduce defensiveness and argumentativeness.

Strategies for Increasing Generalization and Maintenance

The extent of generalization and maintenance of behavior change has been assessed in studies of video based interventions and varies greatly. To maximize the likelihood of generalization and maintenance it is important to include specific generalization promoting strategies. Stokes and Baer (1977) discuss several strategies for
increasing the likelihood of generalization. These strategies include programming common stimuli, using “loose” training, aiming for natural contingencies of reinforcement, and using indiscriminable contingencies of reinforcement.

**Programming Common Stimuli**

Programming common stimuli involves making the training, or instructional, environment as similar as possible to the generalization environment. For video-feedback interventions where the students are watching their own behavior in the general education classroom, self-monitoring may occur in any location, but the videos are from the setting in which the target behavior is expected to occur. This classroom setting is also likely to be very similar to other times of the day during which the target behavior is expected and therefore the likelihood of generalization may be increased.

**Natural Contingencies of Reinforcement**

Aiming for natural contingencies of reinforcement means teaching skills and behaviors that will contact reinforcement in the settings in which the skill is required. Baer (1981) advises practitioners not to target behaviors that will not meet natural communities of reinforcement without first realizing that extra measures will need to be taken to retain any gains made. Depending on the classroom environment, students may or may not be reinforced for engaging in on-task behavior, and in many cases very strong reinforcers exist for engaging in off-task behavior (e.g., peer attention, attention from the teacher, and escape from difficult demands). Even in a classroom with low levels of reinforcement for appropriate behaviors, a change in the environment (e.g. a new
intervention in place, a talk with the teacher, or change in student behavior) may “wake up” sleeping contingencies by reminding the teacher to reinforce appropriate behavior.  

**Indiscriminable Contingencies of Reinforcement**

Indiscriminable contingencies of reinforcement increase the likelihood of generalization and maintenance because students cannot determine when the target behavior might result in reinforcement – therefore they need to engage in the behavior any time that it is appropriate to do so. Three strategies for using indiscriminable contingencies that have been shown to effectively increase generalization and maintenance are unpredictable supervision, delayed reinforcement, and variable, intermittent reinforcement.

In a study by Fowler & Baer (1981), children with autism were provided with reinforcement either immediately after the setting in which the behavior occurred, or later in the day, after several other activities had taken place. The results of the study showed that the behavior increased in the initial setting regardless of when the reinforcement was provided, but when reinforcement was provided later in the day, the behavior occurred in the additional settings, even though reinforcement was provided only for the behavior in the first setting. Dunlap and Johnson (1985) investigated the effects of unpredictable supervision on the on-task behavior and productivity of three children with autism. When a teacher or trainer was present in the classroom the children had high rates of on-task behavior and productivity. However, when the teacher left on a predictable schedule (i.e. left the room and did not return until the end of the work interval) the children’s levels of on-task behavior and productivity dropped dramatically. When an unpredictable...
schedule of supervision was used (the teacher returned to the room on an intermittent schedule) the student’s maintained high levels of on-task behavior and productivity throughout the study.

Summary of Literature Review

A review of the literature related to on-task behavior and the use of video in instruction suggests the following several key points:

1. General education teachers who are providing services to children with special needs are generally concerned about their ability to meet the needs of the special needs student as well as the other children in their classes.

2. Behavior such as off-task behavior, distractibility, and uncooperative behavior are key stressors for general education teachers. These behaviors also tend to lead general education teachers to rate a student’s chance of school and social success as lower than students who do not engage in these types of behaviors.

3. Self-management shows promise as a strategy for increasing the on-task behavior of students with and without disabilities. However, traditional self-management procedures have not been investigated extensively with young children with special needs as participants. Additionally, traditional uses of self-management require the student to manage his or her behavior as it occurs and requires the time and supervision of the general education teacher.

4. Video-based interventions have shown potential for increasing appropriate behaviors of students with disabilities. Video feedback, in particular, has been successfully used to increase social and conversation skills of children with autism and
behavior disorders. Video feedback occurs after the instructional activity rather than during it and can be done by a special education teacher without any additional time or effort from the general education teacher.

5. Further research is needed to determine the effectiveness of video feedback for increasing on-task behavior. In addition, further research needs to be conducted to determine the effects of self-monitoring of on-task behavior on student productivity and to determine what, if any, student characteristics lead to self-monitoring of productivity to be more effective than self-monitoring of on-task behavior.

6. Research on video modeling and video feedback has yielded mixed results related to the maintenance and generalization of skills. Further research needs to be conducted to determine the utility of strategies for maximizing generalization and maintenance with regard to video based interventions. These strategies may include aiming for natural contingencies or reinforcement, programming common stimuli, and using indiscriminable contingencies of reinforcement.

Research Questions

This study was designed and conducted to obtain empirical data in response to the following research questions:

1. What are the effects of video-based self-recording of on-task behavior during independent seatwork on participant behavior during independent seatwork during subsequent sessions of the instructional activity?
2. What are the effects of video-based self-recording of on-task behavior during seatwork on participant productivity during subsequent sessions of the instructional activity?

3. What are the effects of video-based self-recording of on-task behavior from videotapes of participant behavior during independent seatwork on the on-task behavior of the participants during times of the school day not represented in the videos used for self-recording?

4. How will teachers rate the students before and after intervention in terms of the appropriateness of their behavior and their ability to function independently in general education classrooms?

5. How will teachers rate the intervention in terms of ease of use and effectiveness?

6. How will students rate the intervention in terms of effectiveness and acceptability?
CHAPTER 3

METHOD

This chapter describes the methods used to conduct the study and includes the following sections: participants, setting, experimenter, agreement and social validity observers, definition and measurement of dependent variables, experimental design, materials, and procedures.

Participants

Five elementary school students with special education needs participated in this study. One student had autism, and four students had attention deficit hyperactivity disorder (ADHD) or were identified by the school Director as “at-risk” for school failure due to learning and behavioral difficulties. All participants were in first grade and attended a public charter school that uses the Direct Instruction curriculum. The general procedures of the investigation were explained to the parents of potential participants and were provided in writing via an informational letter and participant consent form (see Appendix A). Approval to conduct the study was obtained from the director and CEO of the school and the Institutional Review Board of The Ohio State University. In addition, consent was obtained for video taping to occur from parents of all students in the classroom (Appendix B), as well as from the classroom teacher and any aides working in the class (Appendix C).
Selection Criteria for Participants

To participate in this study, a student had to be included in a general education classroom for at least 50% of regularly scheduled independent work time. In addition, participants had to have the prerequisite skills of independently writing answers to teacher-assigned worksheets, correctly answering “yes/no” questions and correctly responding to at least 80% of the academic material during one-on-one probes of this material. Students who were on-task less than 70% of the time without prompts during independent work time were targeted for this study. Students who displayed disruptive behavior during independent work periods were also targeted for this study. These disruptive behaviors included frequent out-of-seat behavior, calling out for teacher assistance, talking to peers, touching peers or their materials, yelling, fighting, and crying. Demographic information for participants can be found in Table 3.1.

Evan. Evan was a 7-year-old Caucasian boy who lived at home with his mother and two sisters. In the year prior to the study Evan’s mother had a baby and his parents divorced. Evan was diagnosed with attention deficit hyperactivity disorder (ADHD) during the school year of the study and was taking Aderall for hyperactivity and impulsivity. Evan was not receiving special education services through the school, but he was receiving behavioral health services privately. Although Evan was performing at grade level in all academic areas, he was identified as “at risk” for school failure due to his frequent inappropriate behavior.

On the Stanford-9 achievement test Evan scored in the 68th percentile overall. More detailed results of Evan’s performance on this test can be seen in Table 3.1. Evan
was written up by teachers and school staff seven times during the school year. Write-ups were for behaviors such as dancing naked in the bathroom, taking his clothes off in the classroom, drawing pictures of “private parts,” yelling, threatening to cut a child’s throat, and threatening to kill himself. Evan was suspended from school on two occasions, once for poking a girl in the eye with a pencil and a second time for kicking another student between the legs after losing privileges because he had torn up that student’s art project.

Vicky. Vicky was a 7-year-old Caucasian girl who lived with her mother, father, and brother. Vicky was identified as at-risk for school failure but was not receiving any special education services and did not have a formal diagnosis. Vicky participated in grade level academics.

On the Stanford-9 Achievement test Vicky scored in the 56th percentile overall. More detailed results of Vicky’s performance on this test can be seen in Table 3.1. Although Vicky was able to complete teacher assigned work with greater than 80% accuracy when supervised in a one-on-one setting she completed little or no independent work in the classroom prior to the study. During the school year, Vicky’s teacher had sent numerous notes home to Vicky’s mother describing Vicky’s refusal to do work, turning in incomplete homework, having a bad attitude, lying, and hiding notes to/from home from her parents and teacher.

Daniel. Daniel was a 7-year-old multi-racial boy who lived with his mother and father. Daniel was diagnosed with attention deficit disorder (ADD) during the study and
began taking Aderall for inattentiveness after Session 3. Daniel did not receive special education services during the school day and participated in grade level academics.

Daniel scored at the 50th percentile overall on the Stanford-9 Achievement test. His scores on the reading (37th percentile) and listening (27th percentile) components of the test were significantly lower than his scores on other subsections. More detailed results of Daniel’s performance on this assessment can be seen in Table 3.1. During his kindergarten and first grade years Daniel’s parents received many notes about his low attention and off-task behavior. Although Daniel did not engage in disruptive behaviors he often appeared to be “daydreaming” and reportedly completed far less independent work than his peers. His parents reported that Daniel was easily distracted at home and could only complete his homework in a quiet distraction free environment.

Isaiah. Isaiah was a 7-year-old Caucasian boy who lived at home with his mother and younger sister. He was diagnosed with speech delays and was identified as at-risk for school failure due to inappropriate behaviors and below average academic achievement. At school he received 30 minutes of speech therapy one time per week and Title I reading services. Isaiah also left his classroom for math and spelling and attended those subjects with a kindergarten class. Isaiah also received private speech therapy one day per week. Although Isaiah could speak in full sentences, his speech was difficult to understand and he became easily frustrated when others could not understand him.

On the Stanford-9 Achievement test Isaiah scored at the 16th percentile overall. More detailed results of the Stanford-9 test can be seen in Table 3.1. During the school year Isaiah was written up by the bus driver four times for screaming, running, kicking
other students, and biting the bus driver on the bus. Isaiah was no longer permitted to ride the school bus after the fourth incident and his mother drove him to school for the remainder of the year. During the study (from Session 1 to Session 3) Isaiah received a 3-day suspension from school for insubordination (refusing to do his work, lying under his desk screaming, and running around the school).

Orion. Orion was an 8-year-old Caucasian boy who lived at home with both of his parents and an older sister. Orion was diagnosed with autism when he was 2-years-old. Beginning at age two-and-a-half Orion participated in an intensive behavioral intervention program that consisted of one-on-one tutoring for 30-40 hours per week in his home and at school.

At the time of the study Orion was included in his first grade general education classroom for the full school day. He participated in grade level reading, math, spelling, and science, and he received accommodations for reading comprehension, including the assistance of a one on one aide. During school Orion had a one on one aide for two hours in the morning (including reading comprehension, writing, and lunch) and two to three days a week in the afternoon to prompt and promote appropriate social interactions. He also received one on one services at home for 1½ hours per day. During these home sessions Orion worked on selected academic skills and advanced language skills. At the time of the study Orion could speak in full sentences but people who did not know him well had difficulty understanding him. He also had a difficult time understanding some abstract language, especially as it related to complex emotions (e.g. making a prediction about a
character’s possible reaction to a situation based on information provided in a story).

Orion was able to complete independent seat work assignments with at least 80% accuracy.

Orion participated in achievement testing during the study and scored at or above grade level in all academic areas. He also scored in the average range for self help and adaptive skills on the Vineland Scales of Adaptive Skills. Orion scored below average on scales of abstract language, vocabulary, and reasoning skills. Overall, Orion showed a developmental profile similar to that of a typical 5½-year-old child.

Setting

The study took place in a general education first grade classroom and a special education resource room. The general education classroom had 28 students and a teacher. In the general education classroom there was one child with autism, 8 children with other disabilities or special needs, and 19 children without disabilities. The special education classroom was a resource room for children with autism and had one special education teacher, 3-6 children with autism spectrum disorders, and 3-6 one-on-one aides (the number of students and aides in the resource room varied throughout the day). The special education room was used as a location for the students to view their videos and all videos were taped in the general education classroom.

The school was a public charter school in an urban school district with an enrollment of approximately 350 students in kindergarten through third grade. There were three first grade classrooms but all of the students in this study were in the same class. The school used the Direct Instruction curricula for math (Connecting Math
<table>
<thead>
<tr>
<th>Student</th>
<th>Vicky</th>
<th>Isaiah</th>
<th>Daniel</th>
<th>Evan</th>
<th>Orion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>F</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Race</td>
<td>Caucasian</td>
<td>Caucasian</td>
<td>Bi-racial</td>
<td>Caucasian</td>
<td>Caucasian</td>
</tr>
<tr>
<td>Age (years/mos)</td>
<td>7-4</td>
<td>7-1</td>
<td>7-6</td>
<td>7-7</td>
<td>8-3</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>At-risk</td>
<td>Speech delay, LD</td>
<td>ADD⁴</td>
<td>ADHD⁵</td>
<td>Autism</td>
</tr>
<tr>
<td>Medications</td>
<td>none</td>
<td>none</td>
<td>Aderall</td>
<td>Aderall</td>
<td>none</td>
</tr>
<tr>
<td>Stanford-9 Achievement Test (total)¹</td>
<td>56</td>
<td>16</td>
<td>50</td>
<td>68</td>
<td>n/a</td>
</tr>
<tr>
<td>Reading</td>
<td>57</td>
<td>7</td>
<td>37</td>
<td>49</td>
<td>n/a</td>
</tr>
<tr>
<td>Math</td>
<td>63</td>
<td>21</td>
<td>69</td>
<td>80</td>
<td>n/a</td>
</tr>
<tr>
<td>EA</td>
<td>55</td>
<td>18</td>
<td>85</td>
<td>85</td>
<td>n/a</td>
</tr>
<tr>
<td>L</td>
<td>53</td>
<td>31</td>
<td>27</td>
<td>88</td>
<td>n/a</td>
</tr>
<tr>
<td>Write-ups²</td>
<td>5</td>
<td>13</td>
<td>6</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Suspensions³</td>
<td>0</td>
<td>2 (1 bus, 1 school)</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 3.1 Demographic data for participants.

Notes: 1 – The test scores listed are for the Stanford-9 Achievement Test given at the start of the school year. Sub-scores are for reading, math, environmental awareness (EA), and Listening (L). All scores are percentile scores. 2 – Write-ups are notes sent to the office and to the child’s parents because of behavior or academic problems. 3 – Suspensions include removals from school and the bus. 4- ADD is attention deficit disorder. 5- ADHD is attention deficit hyperactivity disorder.
Concepts: Engelmann, Carnine, Engelmann, & Kelly, 1994), reading (Reading Mastery: Engelmann & Bruner, 1995a, 1995b), and language instruction (Language for Learning: Engelmann & Osborne, 1998). The classroom was divided into areas for small group instruction and independent seat work. Figure 3.1 illustrates the set-up of the classroom.

Each classroom in the school followed a similar schedule. Intervention for this study occurred during the morning half of the school day. When students entered their classroom in the morning they were expected to complete independent seatwork for the first 15-30 minutes of school. Seatwork assignments consisted of worksheets given to the students by the teacher (examples of typical seatwork assignments can be seen in Appendix D). Following the 15-30 minute seatwork period, students were split into two groups per class. One group worked with the teacher on reading while the second group was expected to engage in independent boardwork. Boardwork involved copying items from the large dry erase board in the front of the classroom and answering those items. For example, a boardwork assignment typically consisted of copying a story, answering questions about the story, solving math problems, and copying spelling words. Examples of boardwork completed by the students in this study are shown in Appendix E. After one half hour the two groups would switch activities.

Experimenter

The experimenter was a doctoral candidate in special education and applied behavior analysis at The Ohio State University. In 2001 she received a B.S. in Biology from SUNY College at Cortland, and in 1998 she received an M.A. in Special Education from The Ohio State University. She has had 8 years experience working with children
Figure 3.1 Diagram of the general education classroom. “X” shows where the video camera was for the duration of the study.
with autism and other disabilities in classroom settings and in home-based intensive behavioral intervention programs. At the time of the study the experimenter was employed as a graduate assistant at the school where the experiment took place. Her position involved coordinating services for students with autism at the school, including working with the general education teachers, organizing therapies (e.g. speech therapy, occupational therapy), working directly on and supervising work on IEP goals, and providing training to the one-on-one aides who worked with the students with autism.

Interobserver Agreement and Social Validity Observers

Two Ohio State University graduate students assisted the experimenter as independent observers. One independent observer was a first-year master’s student in special education. She conducted interobserver agreement (IOA) for productivity measures in this study. The second independent observer was a second year doctoral student who conducted IOA for on-task behavior from the video clips. Forty-eight graduate students enrolled in special education course at Ohio State University assisted with social validity by watching and rating the participants’ behavior in video clips. The graduate students had various amounts of experience teaching children with and without special needs.

Definition and Measurement of Dependent Variables

On-task behavior and productivity were the dependent variables in this study. Definitions for these behaviors, as well as measurement and recording of data are described in this section.
On-task Behavior

On-task behavior during independent seatwork and boardwork activities was a dependent variable in this study. A student was scored as on-task only if all of the following behaviors were observed: (1) the student was seated at or standing in front of his desk, (2) the assigned work was visible on the student’s desk, (3) the student was looking at the assignment (or the board for boardwork activities) and/or marking on the paper and 4) none of the following behaviors were observed: talking to peers, turning around in chair, looking for items in desk, looking at items other than assigned task, touching other students or their belongings, or getting out of his or her seat.

Students were videotaped during target and generalization instructional times. The videotaped instructional activities were approximately 30 minutes each and two activities were recorded for each participant each day (except for Orion who only participated in one of the activities). The video camera was placed so as to record the on-task behavior of the participants. The participant, his/her desk, and the area immediately surrounding his/her desk were in view of the camera at all times. Video recordings from all targeted instructional times were used for data collection by the experimenter.

All research data were taken from the video-taped recordings. The entire independent seatwork and boardwork instruction sessions were recorded for each student. Each day 10 minutes of video from each activity was selected for data collection. The video was started at random starting points within the first 20 minutes of video so that any 10 minute interval had an equal chance of being viewed. On-task data were collected using 10-second whole-interval recording, with a 5-second recording interval. A beep
tape was started along with the video. One participant was watched for 10 seconds. For
the following 5 seconds, the participant’s behavior was recorded as either on or off task.
To be scored as on-task the participant had to meet the definition of on-task behavior for
the entire 10-second interval. If at any time during the interval the student was off-task,
the entire interval was scored as off-task. Data was then collected for the other
participants in the same manner, returning to participant one after a full 75 second round.
This procedure was continued until 20 intervals were scored for each participant.

Productivity

Productivity during seatwork and boardwork was a dependent variable in this
study. Productivity was defined as the total number of correct written responses made by
a participant and dividing that number by the number of minutes that the student had to
complete the activity for a rate measure of responses per minute. A written response was
defined as any single written character including letters, digits, mathematical symbols,
underlining, shapes, arrows, boxes, and punctuation marks. Each written character was
counted as one response regardless of the number of lines used to make the character.
For example, the following characters each counted as one response: a, 3, +, =, “, ?. The
problem “2+2=4” would be counted as five correct responses and the written response
“The man came home at 2:00 p.m.” would be 24 correct responses (assuming that it was
an accurate answer to a question). In order to be correct the response had to either be a
duplication of written boardwork or be an accurate response to a question.

The participants’ seatwork and boardwork papers were photocopied to provide a
permanent product from which productivity data were taken. The total number of correct
responses was counted for each activity and then divided by the number of minutes allotted for that activity to determine a rate of responding. Data were recorded on the bottom half of the data sheet shown in Appendix F.

**Interobserver Agreement**

Interobserver agreement (IOA) for each dependent variable was assessed within each phase of the study. One secondary observer was trained to record data for on-task behavior. Training included discussion and definition of the dependent variables, the secondary observer watching and scoring training videos, and clarifying discrepancies between the experimenter and secondary observers. The videos used for training were clips of the participants during baseline conditions. These were the same types of clips used for the actual IOA sessions but these specific clips were not included in IOA data. Following a description of the dependent variable and an explanation of the data sheets, the experimenter and secondary observer watched a practice video and scored it together. The secondary observer had an opportunity to ask any questions and then watched and scored additional videos on her own. The secondary observer’s data were compared to the experimenter’s data to check for agreement. Once IOA reached 90% for on-task behavior with the training videos (using interval by interval agreement), the secondary observer began scoring videos selected for IOA. IOA was assessed on at least 33% of all scored videotapes in all phases of the study. Agreement was then calculated using interval-by-interval agreement, scored-interval, and unscored-interval agreement.

The experimenter also trained one secondary observer to record productivity measures. The experimenter described the definition of the dependent variable to the
observer and showed her examples of the students’ work, and data sheets were explained. The experimenter and the secondary observer then scored one sample of seatwork and boardwork together. Following this training the secondary observer scored sample seatwork and boardwork on her own until her scores exactly matched the experimenter’s scores for two consecutive samples of each type of work. After scoring 1 sample of seatwork and 3 samples of boardwork, the two scorers reached this criterion and scoring of actual work samples began. The secondary observer scored at least 33% of seatwork and boardwork for all participants across all phases of the study. IOA was calculated by comparing the experimenter’s data to the secondary observer’s data and dividing the smaller number of recorded responses by the larger number of recorded responses and multiplying by 100.

**Experimental Design**

A multiple baseline across participants design was used to assess the existence of any functional relationships between video-based self-recording of on-task behavior and students’ on-task behavior and productivity. Data collection began on all participants, except Evan, at the same time. Evan’s start time was delayed because he was not in the original group of participants. Baseline conditions continued until the data for two participants showed stability. At this time intervention was begun for these two students while the others remained under baseline conditions. When intervention data for these two students showed stability, a third student began intervention. The study continued in this manner until all of the students were in intervention. Once intervention data stabilized for the first targeted instructional activity (e.g., seatwork), intervention was
introduced for the second activity (e.g. boardwork) if generalization had not occurred. The experimental logic of a multiple baseline design is that if changes in the dependent variable occur when and only when changes are made in the independent variables manipulated by the experimenter, then the changes in behavior are likely to be a result of the intervention (Cooper, Heron, and Heward, 1987).

Materials

Electronic equipment for this study included a digital video camera and computer for recording and watching videos, and an audio cassette tape recorder with a beep tape for student self-recording sessions and data collection by the experimenter and secondary observer. Manual recording materials included data sheets (Appendix G), self-recording score cards (Appendix H), a star chart (Appendix I), and pens and pencils. Materials used for rewards included various edibles and toys. Examples of prizes for meeting individual goals one time included edibles (dum-dum lollipops, smarties candies), pencils, erasers, and bouncy balls. Examples of prizes for meeting individual goals three times included snack size kit-kats, small notebooks, gel pens, stretchy lizards, and coloring books. Examples of prizes used for meeting individual goals five times included boxes of crayons, gel bracelets, Yugi-O cards, and books.

Procedures

Baseline

During baseline students were videotaped daily during seatwork and boardwork. The experimenter used these tapes to collect data on on-task behavior for each participant. The participants did not receive feedback on their behavior during these
sessions nor did they have access to the tapes during baseline. In addition, the students did not know why or who the video camera was there to tape. The video camera remained in the classroom all day and was turned on and off by the experimenter at the appropriate times. There was no obvious cue to signal to the students whether the camera had just been turned on or off. Once the camera was turned on or off the experimenter left the room.

During seatwork and boardwork activities the classroom teacher was engaged in small-group reading instruction with a group of students from the class and the other students were expected to remain on-task without direct supervision. Although the teacher occasionally reminded the students to get back to work, no systematic supervision or feedback was provided to the students. The experimenter noted, however, that on several occasions during baseline the classroom teacher referred to the video camera. For example, if students became very off-task or disruptive she would say, “Remember, the camera can see you.” However, these comments were typically made to the class as a whole, and the teacher never indicated that certain students would be watching their videos at a later time. The teacher also often commented to the students who were in independent work (seatwork or boardwork) that the camera was looking for students who were, “Doing their work.”

In addition to corrections for off-task behavior, the classroom teacher occasionally provided feedback to the students engaged in independent work by commenting on how hard they were working. For example, she occasionally paused her instruction with the reading group to make a comment such as, “I really love the way you
are all working so hard on your boardwork.” There was also a school-wide positive behavior plan used in each classroom. Each student had a pocket of colored cards on a chart hanging in the classroom that was used by the teacher to rate his or her behavior. Each card color corresponded to a specific level of success (e.g. orange = having an amazing day, green = doing okay, and red = warning). Consequences were associated with several of the levels. Students on orange at the end of the day were entered in a school-wide drawing for prizes and got their picture posted on a “star student” board in the front hallway of the school. Students who were on red at the end of the day lost recess for the following day. The teacher often moved the students’ cards up or down at the end of the independent work times based on their level of on-task behavior.

In addition to collecting data from the videotapes, the experimenter photocopied seatwork and boardwork from the participants and two other students each day. These photocopies were used to collect productivity data. The two additional students were identified by the teacher as an average student and an above-average student. Their productivity was measured throughout the study as a norm with which to compare the participants’ productivity. The students’ work was collected, photocopied, and returned to their desks while they were out of the room for recess or specials. This procedure remained constant throughout the study so that students were unaware that their productivity was being measured.

During baseline four of the five participants received no other specialized intervention or adult assistance. The fifth student, Orion, had a part time one-on-one behavioral intervention aide who assisted him in the classroom. The aides prompted
Orion to stay on task and provided reinforcement for appropriate classroom and social behavior. For the purpose of the study, Orion’s aides were trained to not prompt him during seatwork activities. Orion did not participate in boardwork so seatwork was his only targeted activity. In addition, Orion’s aides used a token reinforcement system with him throughout the day. Tokens were given to Orion on a variable interval schedule (VI 5 minute) for appropriate behavior. This procedure was kept in place during seatwork and was maintained throughout the course of the study.

**Video-based Self-recording**

During video-based self-recording, procedures for data collection (from videotapes and photocopied seatwork and boardwork) by the experimenter, supervision by the teacher, and reinforcement by Orion’s aides remained the same as in baseline. Each evening after videotapes were scored the experimenter transferred a 5-minute clip of video onto a computer for student viewing. The following day the student would come to the resource room to view and score the video. Videos from the targeted activity were viewed each day. However, students never viewed videos from other times of the day, until those activities were specifically targeted. The first session of self-recording involved training the student how to determine whether or not they were on-task and how to use the self-recording score card. A script of training procedures can be seen in Appendix G.

In the resource room the student sat at a table with a computer, an audio cassette player, a self-recording form (Appendix H), and a pencil. The self-recording form was a table with 20 rows. Each row was divided into the following four columns: Interval, Yes,
No, and a space for notes. The students made a mark in either the “yes” or “no” column for each interval. Prior to watching the video the experimenter asked the student to state the definition of on-task and reviewed the daily goal with the student. The initial goal for each participant was determined by adding one to the mean number of on-task intervals reached during baseline (as determined by the experimenter scoring video clips during baseline). For example, Daniel was on-task for 47% of intervals during baseline. His initial goal was therefore set at ten “yes” intervals (i.e. he had to have been on-task ten times out of twenty opportunities, or 50% of the time). Goals were increased as the participant’s on-task behavior increased. Each participant’s goal was raised by one each time he or she met his or her goal for two consecutive sessions.

After reviewing definitions and goals, the experimenter started the video clip on the computer and the audio cassette player which played a tape of pre-recorded beeps that sounded every 12 seconds. At the first beep, the student would determine whether or not they were doing their work in the video and mark the score card accordingly. The participants only scored the behavior that was occurring when the beep sounded. The self-recording procedure continued for 20 consecutive intervals.

At the end of the self-recording session the student counted the number of marks in the “yes” column and wrote the total number on the bottom of the table (see Appendix H for a completed score card). The total number of “yes’s” was then compared to the goal and the student determined whether or not he or she reached his or her goal. Each day that the student met his or her goal, he or she received a star on the “Star Chart” (Appendix I). Prizes were earned when the student accumulated one, three, and five
stars. Different reward bins were used for each accomplishment. Rewards were given immediately following completion of the self-recording session.

*Individual Modifications for Isaiah and Orion.* Modifications were made to the video-based self-recording intervention for individual students as needed. Because no significant changes in on-task behavior were observed for Orion after six sessions of self-recording, a physical cue was added to increase the chance that Orion would be more on-task during seatwork. A small piece of paper was placed on his desk when he was being videotaped with the following words written on it, “The video camera is on – remember to do your work!”

A slight change was made to the self-recording procedures for Orion and Isaiah. Both students had a difficult time quickly determining whether or not they were on-task and marking the self-recording form. As a result they repeatedly missed “beeps” because it took them too long to record the previous interval. Therefore, beginning with Session #11 the experimenter paused the video every 10 seconds and gave the students additional time to record their behavior.

*Intermittent Video-based Self-recording*

To assess generalization of behavior change, data were collected from videos of instructional times during the day that were not being targeted during self-recording. For example, if a student began intervention by self-recording video from seatwork, video from boardwork was scored by the experimenter to determine whether or not generalization across settings had occurred. Once behavior during the first activity (e.g. seatwork) had stabilized, the second activity (e.g. boardwork) was targeted for two of the
five students. For Vicky and Daniel, video clips from both activities were self-scored (10 intervals of seatwork and 10 intervals of boardwork) during this time. Orion did not participate in a second activity and Evan and Isaiah did not reach stable enough levels of on-task behavior in the first setting to begin self-recording in the second setting.

Once the targeted behaviors reached a criterion level of 80% or above for on-task behavior for three consecutive sessions, the video-based self-recording procedure was systematically faded for Vicky and Daniel. First, the students continued to watch the videos daily but they only watched video from one of the activities. To prevent the student from recognizing this schedule and realizing they only needed to perform the target behavior in one setting video clips for the self-recording sessions were randomly selected. This was done by having the student select a piece of paper from a hat indicating the activity to be scored. The target behavior reached criterion if it was at least 80% for three consecutive sessions. Self-recording was then faded to every other session. Once this procedure was started the students blindly selected a piece of paper that listed a day and an activity in order to randomly determine which video would be viewed. The intervention was further faded by reducing self-scoring sessions to once every three sessions.

Accuracy of Self-Recording

While each participant watched and scored his or her videos, the experimenter completed an identical recording form. After the session the experimenter compared her scores to the student’s scores and calculated percent agreement on an interval-by-interval basis. When the student dropped below 90% agreement for two consecutive sessions
retraining occurred. Training was provided in the session immediately following the two sessions with low agreement. During this session the experimenter sat beside the student and paused the video for each self-recording opportunity. When the video was stopped the experimenter asked the student the following questions: Is your paper on your desk? Are you looking at the board or your paper? Are you doing your work? If the student answered any of the questions incorrectly, the experimenter would discuss the discrepancy with the student.

For one student (Orion) an additional training session was conducted following Session #5 to practice “telling the truth.” Orion could accurately score other students as on-task or off-task but he would often state that he was on task even though he was not. During the training session for telling the truth, Orion received a star for matching the experimenter’s score card rather than for achieving a pre-set goal for on-task behavior.

Social Validity

Questionnaires. Social validity of the procedures and outcomes was measured using questionnaires (see Appendix K for teachers and Appendix L for students) and rating of video clips. Questionnaires were given to participants and the classroom teacher at the conclusion of the study. The questionnaires were given and collected by a person not associated with the study. The teacher was given a paper and pencil questionnaire with questions that addressed the importance of the target behavior, student outcomes, and the acceptability of the treatment. The participants were asked questions verbally by an adult that was an aide in the school, but not in the participants’ classroom and who had
no part in the study. The questions and their responses were audio recorded for transcription. Student questions address likeability of the intervention and perceived outcomes.

Social Validity of Productivity Outcomes. To measure the validity of student outcomes for productivity, participant productivity was compared to the productivity of students identified by the classroom teacher as successful. Work samples were collected from two students in the class, one identified as “average” and the other as “above average” by the teacher. Samples were collected throughout baseline and intervention and then compared to participants’ work samples.

Social Validity of On-Task Outcomes. To measure the validity of student outcomes for on-task behavior a group of current and future teachers who were enrolled in a special education course at The Ohio State University viewed sample video clips of the participants. The observers rated student’s behavior in terms of predicted level of success in a general education classroom on a scale of 1 (not successful at all/not a good candidate for inclusion in general education) to 5 (extremely successful/no concerns about inclusion in a general education classroom). Three clips were shown from baseline and intervention phases in a random order for each participant (for a total of six 20-second clips per participant). An equal number of clips were shown from baseline and intervention. These clips were randomly selected from tapes made throughout the study. However, the first four sessions after video-based self-recording were not included in the random selection. This was done to increase the likelihood that the intervention clips provided an accurate portrayal of the participant’s post-intervention behavior.
To randomly select the clips to be used, the date of baseline sessions for a given participant was written on a separate piece of paper. Three papers were then blindly chosen for each participant to determine which sessions would be used for social validity purposes. Then each number from 1 to 25 was written on a separate slip of paper to represent the first twenty-five minutes of each video (most videos were approximately twenty-five minutes with a range of twenty to thirty-five minutes). One number was selected for each previously selected session and the video was played for one minute starting at the minute that corresponded to the chosen number. Clips for social validity assessment of behavior during video-based self-recording were selected in the same manner. The random selection increased the likelihood that the selected clips would be a true reflection of student behavior during each phase of the study.
CHAPTER 4

RESULTS

This chapter presents the results of the study. First interobserver agreement data are reported for measures of on-task behavior and productivity. Next, on-task and productivity data collected during baseline, intervention, and fading conditions are reported for each participant. Finally, the results of social validity questionnaires and video clip scoring by teachers are reported.

Interobserver Agreement

Two graduate students collected interobserver agreement (IOA) data on 35% of the study’s sessions. IOA sessions were distributed equally across all phases of the study for all participants. IOA measures of on-task behavior ranged across participants from 82% to 100% with an overall mean of 94%. IOA on productivity ranged across participants from 92% to 100% with an overall mean of 98%. See Table 4.1 for complete IOA results.

Vicky

Vicky participated in a total of 38 sessions across eleven weeks. She participated in the following four conditions of the study: baseline, video-based self-recording (VBSR) – seatwork, VBSR – boardwork, and intermittent VBSR. The following section summarizes Vicky’s results.
<table>
<thead>
<tr>
<th></th>
<th>Seatwork: On-task</th>
<th>Boardwork: On-task</th>
<th>Seatwork: Productivity</th>
<th>Boardwork: Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>VBSR</td>
<td>Inter. VBSR</td>
<td>Baseline</td>
</tr>
<tr>
<td>Vicky</td>
<td>98 (3)</td>
<td>88 (7)</td>
<td>92 (3)</td>
<td>94 (3)</td>
</tr>
<tr>
<td>Isaiah</td>
<td>100 (2)</td>
<td>85 (10)</td>
<td></td>
<td>99 (2)</td>
</tr>
<tr>
<td>Daniel</td>
<td>96 (5)</td>
<td>99 (6)</td>
<td>99 (3)</td>
<td>94 (5)</td>
</tr>
<tr>
<td>Evan</td>
<td>100 (4)</td>
<td>98 (4)</td>
<td></td>
<td>91 (4)</td>
</tr>
<tr>
<td>Orion</td>
<td>85 (7)</td>
<td>91 (5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.1 Average percent interobserver agreement for on-task behavior and productivity across settings for each participant. Numbers in parentheses indicate number of sessions scored for IOA.
**On-task Behavior**

Figure 4.1 shows Vicky’s on-task behavior during seatwork and boardwork across all phases of the study (baseline, VBSR of seatwork, VBSR of boardwork, and intermittent VBSR for Vicky).

**Baseline.** Vicky’s baseline data demonstrate a low, stable rate of on- task behavior during seatwork and boardwork with moderate levels of variability. During baseline Vicky was on-task an average of 6.7% of intervals for seatwork and 15.6 percent of intervals for boardwork. She was never on task for more than 20% of intervals for seatwork and 25% of intervals for boardwork.

**Video-based self-recording of seatwork.** Vicky began video self recording of seatwork after Session #9. Percent of intervals on-task remained at 0% in seatwork for two sessions following the start of intervention. Beginning with the third session of VBSR for seatwork, on-task behavior showed an increasing trend with a moderate level of variability. Mean on-task behavior during intervention for seatwork increased to 60.4% with a range of 0-90% for seatwork. Although intervention involved only the videos from seatwork at this time, Vicky’s on-task behavior during boardwork increased following the start of intervention. During this intervention phase her mean percent of intervals on-task for boardwork was 55% with a range of 0-85%.

**Video-based self-recording of boardwork.** Once Vicky’s on-task behavior stabilized at above 80% in seatwork, intervention was started in boardwork (following Session# 29). Vicky’s on-task behavior for boardwork increased to a mean of 80% of intervals once she began scoring her behavior from videos of boardwork. In addition, her
Figure 4.1 Percent of intervals on-task by Vicky during baseline, video-based self-recording (VBSR) – seatwork, VBSR – boardwork, and intermittent VBSR for boardwork (closed diamonds) and seatwork (open squares). * indicates a school day for which there was a substitute teacher and the break in the horizontal axis indicates a 1-week school vacation.
on-task behavior during seatwork continued to rise to a mean of 71.7% of intervals. During this phase, the data paths for both settings stabilized and showed lower variability than in the previous phase.

Academic Productivity

Figure 4.2 shows Vicky’s academic productivity during seatwork and boardwork across all phases of the study (baseline, VBSR of seatwork, VBSR of boardwork, and intermittent VBSR for Vicky).

Baseline. Baseline data demonstrate a low, stable rate of academic productivity in seatwork and boardwork with almost no variability. Levels remained below 1.0 response per minute in both settings with only one exception. Vicky’s responses per minute averaged .28 for seatwork and 1.8 for boardwork (average is skewed by one day of 4.3 responses per minute) during baseline.

Video-based self-recording of seatwork. Compared to baseline levels, Vicky’s academic productivity increased for seatwork during VBSR for seatwork, to a mean of 3.1 responses per minute with a low level of variability. In addition, her productivity during boardwork also increased. During video self recording of seatwork, Vicky’s productivity for boardwork increased to a mean of 7.7 with a range of .6-24.5 responses per minute.

Video-based self-recording of boardwork. Academic productivity during boardwork increased slightly when intervention began in boardwork to a mean of 8.7 responses per minute. Productivity for boardwork showed an increasing trend throughout this phase of intervention. Productivity during seatwork continued to increase and Vicky
Figure 4.2 Number of academic responses per minute by Vicky during baseline, VBSR – seatwork, VBSR – boardwork, and intermittent VBSR during seatwork (closed diamonds) and boardwork (open squares). * indicates a school day for which there was a substitute teacher and the break in the horizontal axis indicates a 1-week school vacation.
had a mean of 5.0 responses per minute although a decreasing trend was seen following an initial increase.

**Intermittent video-based self-recording**

Both target behaviors (on-task behavior and academic productivity) demonstrated increased and stable levels during VBSR of boardwork. Therefore, the intervention was systematically faded beginning at Session #33. During this fading of the intervention, on-task behavior for both settings continued to remain high, increasing to an average of 74.4% for seatwork and 93.9% for boardwork. Productivity for boardwork continued to increase, with a mean of 9.7 responses per minute during this phase of the study. Productivity for seatwork dropped slightly to a mean of 3.9 responses per minute but remained well above baseline levels.

**Summary**

Overall, Vicky showed an increase in on-task behavior for seatwork and boardwork following the start of intervention for seatwork. Productivity during seatwork and boardwork also increased following intervention in seatwork. On-task behavior and productivity during boardwork and seatwork increased further once intervention was started in boardwork. Vicky’s on-task behavior remained high and stable for both activities during fading of the intervention (indiscriminable contingency) and her productivity for both settings continued to increase during this phase of the study.
Isaiah participated in a total of 34 sessions across eleven weeks. He participated in baseline and video-based self-recording (VBSR) of boardwork. The following section summarizes Isaiah’s results.

**On-task Behavior**

Figure 4.3 shows Isaiah’s on-task behavior during seatwork and boardwork across all phases of the study (baseline and VBSR of boardwork for Isaiah).

**Baseline.** Isaiah’s baseline data demonstrate low, stable levels of on-task behavior during seatwork and boardwork with low levels of variability. During baseline Isaiah was on-task an average of 6.7% of intervals for seatwork and 11.3% of intervals for boardwork. His percent of interval on task ranged from 0-40% for seatwork and 0-45% for boardwork, and was only above 0% one time for each activity.

**Video-based self-recording of boardwork.** Isaiah began video self recording of boardwork after Session #9. Following the start of intervention, Isaiah’s on task behavior in boardwork rose slowly for Sessions 10 and 11 before rising more significantly. Once his on-task behavior rose above 50% for boardwork, variability decreased for nine sessions before increasing dramatically again. High stable levels of responding were not obtained again during the study. During self recording of boardwork, Isaiah was on task during boardwork for an average of 63.1% of intervals with a range of 0-100%. Although intervention involved only the videos from boardwork at this time Isaiah’s on-task behavior during seatwork increased slightly following the start of intervention. However, these gains lasted for only three sessions.
Figure 4.3 Percent of intervals on-task by Isaiah during baseline and VBSR – boardwork for boardwork (closed squares) and seatwork (open diamonds). * indicates a school day for which there was a substitute teacher and the break in the horizontal axis indicates a 1-week school vacation.
before on-task rates for seatwork dropped to baseline levels. During this intervention phase his mean percent of intervals on-task for seatwork 14.1 with a range of 0-80%.

**Academic Productivity**

Figure 4.4 shows Isaiah’s academic productivity during seatwork and boardwork across all phases of the study (baseline and VBSR of boardwork for Isaiah).

**Baseline.** Isaiah’s baseline data demonstrate low levels of academic productivity with low levels of variability. During baseline, Isaiah had an average rate of .35 responses per minute with a range of 0-0.9 for seatwork and a mean of .4 with a range of 0.4-1.5 for boardwork.

**Video-based self-recording of boardwork.** Compared to baseline levels, Isaiah’s academic productivity increased considerably for boardwork during this phase of intervention, to a mean of 3.1 with a range of 0-10.1 responses per minute. In addition, his productivity during seatwork also increased slightly to a mean of 0.9 responses per minute. However, like on-task behavior, Isaiah’s productivity in seatwork increased only temporarily before returning to baseline levels.

**Summary**

Overall, Isaiah showed an increase in on-task behavior for boardwork following the start of intervention for boardwork, with only a slight and temporary increase in seatwork during this intervention. Productivity during boardwork also increased following intervention in boardwork but the increase in seatwork lasted for only a few sessions. Because of the lack of stability in Isaiah’s data, and because he often expressed
Figure 4.4 Number of academic responses per minute by Isaiah during baseline and VBSR – boardwork for seatwork (open diamonds) and boardwork (closed squares). * indicates a school day for which there was a substitute teacher and the break in the horizontal axis indicates a 1-week school vacation.
frustration with “remembering” to stay on-task while he was being taped, intervention was not started for seatwork during this study.

Daniel participated in a total of 38 sessions across eleven weeks. He participated in the following four conditions of the study: baseline, video-based self-recording (VBSR) – seatwork, VBSR – boardwork, and intermittent VBSR. The following section summarizes Daniel’s results.

On-task Behavior

Figure 4.5 shows Daniel’s on-task behavior during seatwork and boardwork across all phases of the study (baseline, VBSR of seatwork, VBSR of boardwork, and intermittent VBSR for Daniel).

Baseline. Daniel’s baseline data demonstrate moderate levels of on-task behavior during seatwork and boardwork with high levels of variability. During baseline Daniel was on-task an average of 41.6% of intervals for seatwork and 45% of intervals for boardwork. His percent of interval on task ranged from 0-70% for seatwork and 0-80% for boardwork.

Video-based self-recording of boardwork. Daniel began video self recording of boardwork after Session #16. Following the start of intervention, Daniel’s on task behavior temporarily declined before rapidly increasing during boardwork. Once this increase occurred, rates remained high and constant. During self recording of boardwork, Daniel was on task during boardwork for an average of 77.7% of intervals. Although
Figure 4.5 Percent of intervals on-task by Daniel during baseline, VBSR – boardwork, VBSR – seatwork, and intermittent VBSR for boardwork (closed squares) and seatwork (open diamonds). * indicates a school day for which there was a substitute teacher and the break in the horizontal axis indicates a 1-week school vacation.
intervention involved only the videos from boardwork at this time Daniel’s on-task behavior during seatwork increased slightly following the start of intervention. During this intervention phase his mean percent of intervals on-task for seatwork 48.6 with a range of 30-100%.

*Video-based self-recording of seatwork.* Once Daniel’s on-task behavior stabilized above 80% in boardwork, intervention was started in seatwork (following Session #28). Daniel’s on-task behavior for seatwork increased significantly to a mean of 84% of intervals once he began scoring his behavior from videos of seatwork. In addition, his on-task behavior during boardwork continued to rise to a mean of 89% of intervals. During this phase, the data paths for both activities stabilized and showed lower variability than in the previous phase.

**Academic Productivity**

Figure 4.6 shows Daniel’s academic productivity during seatwork and boardwork across all phases of the study (baseline, VBSR of boardwork, VBSR of seatwork, and intermittent VBSR for Daniel).

*Baseline.* Daniel’s baseline data demonstrate moderate levels of academic productivity with high levels of variability. During baseline, Daniel had an average rate of 2.6 responses per minute with a range of .2-4.8 for seatwork and a mean of 3.5 with a range of .6-6.4 for boardwork.

*Video-based self-recording of boardwork.* Compared to baseline levels, Daniel’s academic productivity increased slightly for boardwork during this phase of intervention,
Figure 4.6 Number of academic responses per minute by Daniel during baseline, VBSR – boardwork, VBSR – seatwork, and intermittent VBSR for seatwork (open diamonds) and boardwork (closed squares). * indicates a school day for which there was a substitute teacher and the break in the horizontal axis indicates a 1-week school vacation.
to a mean of 4.3 responses per minute with a moderate level of variability. In addition, his productivity during seatwork also increased slightly. During video self recording of boardwork, Daniel’s productivity for seatwork increased to a mean of 3.7 with a range of 1.9-4.8 responses per minute.

**Video-based self-recording of seatwork.** Productivity during seatwork increased slightly when intervention began in boardwork to a mean of 4.2 responses per minute. Productivity during boardwork decreased slightly during this phase of intervention. Daniel had a mean of 4.0 responses per minute for boardwork, which was still above baseline levels.

**Intermittent video-based self-recording**

Both behaviors (on-task behavior and academic productivity) demonstrated increased and stable levels during intervention on seatwork. Therefore, the intervention was systematically faded beginning at Session #34. During this fading of the intervention, on-task behavior for both settings continued to remain high, increasing to an average of 90% for seatwork and 96.3% for boardwork. Productivity for seatwork continued to increase, with a mean of 4.4 responses per minute during this phase of the study. Productivity for boardwork also rose above all previous phases, with a mean of 4.9 responses per minute.

**Summary**

Overall, Daniel showed an increase in on-task behavior for seatwork and boardwork following the start of intervention for boardwork. Productivity during seatwork and boardwork also increased following intervention in seatwork. On-task
behavior during boardwork and seatwork increased further once intervention was started in boardwork. Productivity in boardwork also increased when boardwork was targeted for intervention, although productivity in seatwork decreased slightly. Daniel’s on-task behavior remained high and stable for both activities during fading of the intervention (Interruption VBSR) and his productivity for both settings continued to increase during this phase of the study.

Evan

Evan participated in a total of 22 sessions across eight weeks. Evan participated in fewer sessions than the other students because he was not initially identified as a participant in this study. He participated in baseline and video-based self-recording (VBSR) of seatwork. The following section summarizes Evan’s results.

**On-task Behavior**

Figure 4.7 shows Evan’s on-task behavior during seatwork and boardwork across all phases of the study (baseline and VBSR of seatwork for Evan).

**Baseline.** Evan’s baseline data demonstrate a low and stable level of on-task behavior during seatwork with a mean of 4.7% and a moderate and stable rate of on-task behavior during boardwork with a mean of 48.3%.

**Video-based self-recording of seatwork.** Evan began video-based self-recording of seatwork after Session #26. Percent of intervals on task remained at 0% for three sessions following the start of intervention. Following the third session, on-task behavior showed an increasing trend with a high level of variability. Mean on-task behavior for
Figure 4.7 Percent of intervals on-task by Evan during baseline and VBSR – seatwork for boardwork (open squares) and seatwork (closed diamonds). * indicates a school day for which there was a substitute teacher and the break in the horizontal axis indicates a 1-week school vacation.
seatwork during VBSR - seatwork was 34.5% with a range of 0-80%. Although intervention involved only the videos from seatwork, Evan’s on-task behavior during boardwork also increased following the start of intervention. Mean percent of intervals on-task for boardwork during VBSR – seatwork was 74.1% with a range of 30-85%.

**Academic Productivity**

Figure 4.8 shows Evan’s academic productivity during seatwork and boardwork across all phases of the study (baseline and VBSR of seatwork for Evan).

*Baseline.* Evan’s baseline rate of academic productivity in seatwork was highly variable during the first seven sessions and he made no academic responses for the last five baseline sessions. Baseline data for productivity during boardwork are more variable and range from 0-10.9 responses per minute and a mean of 6.7 responses per minute.

*Video-based self-recording of seatwork.* Compared to baseline levels, Evan’s productivity increased for seatwork during intervention with a mean of 3.4 responses per minute, although his rate continued to be highly variable with a range of 0.0-10.4 responses per minute. Although on-task behavior increased for boardwork during intervention, productivity for boardwork declined slightly. Evan’s mean responses per minute during this phase were 5.6 with a range of 1.4-9.4.

**Summary**

Overall, Evan showed an increase in on-task behavior for seatwork and boardwork following the start of intervention for seatwork. Academic productivity during seatwork also increased following intervention; however a slight decrease was seen in productivity for boardwork. Overall Evan’s variability of on-task behavior and
Figure 4.8 Number of academic responses per minute by Evan during baseline and VBSR – seatwork for seatwork (closed diamonds) and boardwork (open squares). * indicates a school day for which there was a substitute teacher and the break in the horizontal axis indicates a 1-week school vacation.
productivity increased following intervention. Evan’s participation in this study was cut short because of a suspension at the end of the school year.

Orion

On-task Behavior

Figure 4.9 shows Orion’s on-task behavior across all phases of the study (baseline and video self-recording of seatwork for Orion).

Baseline. Orion’s baseline data demonstrate moderate levels of on-task behavior during seatwork with low levels of variability and a slightly increasing trend. During baseline Orion was on-task an average of 44.3% of intervals with a range of 15-70% for seatwork.

Video-based self-recording of seatwork. Orion began video self-recording of seatwork after Session %25. Following the start of intervention, Orion’s on-task behavior in seatwork remained low for five sessions. At this time, cues were added to remind Orion to “do his work” during seatwork. Following the implementation of this cue his on-task behavior rose significantly. During self-recording of seatwork, Orion was on task during seatwork for an average of 76.4% of intervals with a range of 45-90%.

Academic Productivity

Figure 4.10 shows Orion’s academic productivity across all phases of the study (baseline and video self-recording of seatwork for Orion).

Baseline. Orion’s baseline data demonstrate moderate levels of academic productivity with low levels of variability, except for one high session (Session 15).
Figure 4.9 Percent of intervals on-task by Orion during baseline and VBSR – seatwork for seatwork. * indicates a school day for which there was a substitute teacher and the break in the horizontal axis indicates a 1-week school vacation.
Figure 4.10 Number of academic responses per minute by Orion during baseline and VBSR – seatwork. * indicates a school day for which there was a substitute teacher and the break in the horizontal axis indicates a 1-week school vacation.
During baseline, Orion had an average rate of 6.7 responses per minute with a range of .6-34.2 for seatwork.

*Video-based self-recording of seatwork.* Compared to baseline levels, Orion’s productivity showed a moderate increase for seatwork to a mean of 9.6 with a range of 1.6-28.6 responses per minute. As with Orion’s on-task behavior, academic productivity increased following the introduction of the cue card as a reminder that he was being videotaped.

*Summary*

Overall, Orion showed an increase in on-task behavior for seatwork following the start of intervention for seatwork plus cues to remain on-task. Orion did not participate in boardwork activities and therefore no measures of generalization across settings are available. Productivity during seatwork also increased following intervention in seatwork.

*Group Summary*

Table 4.2 shows mean (and range) percentage of intervals each participant was on-task during seatwork and boardwork sessions during each experimental condition. Figure 4.11 shows percent of intervals on-task for seatwork and boardwork for all five participants (except for Orion who participated in seatwork only). Data demonstrate descending or stable data paths for all participants during baseline, for on-task behavior during the first activity to be targeted. Data for all five participants show increases in on-across phases task behavior when, and only when, intervention is introduced for the activity targeted first. This trend demonstrates a functional relationship between the
<table>
<thead>
<tr>
<th></th>
<th>Baseline SW</th>
<th>Baseline BW</th>
<th>VBSR – Seatwork SW</th>
<th>VBSR – Seatwork BW</th>
<th>VBSR – Boardwork SW</th>
<th>VBSR – Boardwork BW</th>
<th>Intermittent VBSR SW</th>
<th>Intermittent VBSR BW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vicky</td>
<td>75 (0-20)</td>
<td>16 (0-20)</td>
<td>60 (0-95)</td>
<td>55 (0-85)</td>
<td>72 (65-80)</td>
<td>80 (50-100)</td>
<td>74 (45-85)</td>
<td>94 (85-100)</td>
</tr>
<tr>
<td>Isaiah</td>
<td>7 (0-40)</td>
<td>11 (0-45)</td>
<td></td>
<td></td>
<td>14 (0-80)</td>
<td>63 (0-100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daniel</td>
<td>42 (0-70)</td>
<td>45 (0-80)</td>
<td>84 (40-100)</td>
<td>89 (80-95)</td>
<td>49 (30-100)</td>
<td>78 (20-100)</td>
<td>90 (65-100)</td>
<td>96 (90-100)</td>
</tr>
<tr>
<td>Evan</td>
<td>5 (0-35)</td>
<td>48 (0-80)</td>
<td>35 (0-80)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orion</td>
<td>44 (15-70)</td>
<td></td>
<td>76 (30-81)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2 Mean (and range) percentage of intervals each participant was on-task during seatwork and boardwork sessions during each experimental condition. Data are rounded to the nearest whole number.
Figure 4.11 On-task behavior for all participants across conditions
participants intervention and on-task behavior and illustrates the experimental logic of the multiple baseline design.

Figure 4.11 also shows that there was an increase in on-task behavior for the activity not targeted for the four participants who engaged in both instructional activities. Finally, for the two participants who participated in intervention for their second activity, further increases are seen in on-task behavior during that second activity once intervention was begun for that setting.

Table 4.3 shows mean (and range) of correct responses per minute for each participant during seatwork and boardwork sessions during each experimental condition. Figure 4.12 shows productivity measures (responses/minute) for seatwork and boardwork for all five participants across phases (except for Orion who participated in seatwork only). Data demonstrate descending or stable data paths for all participants during baseline, for productivity during the first activity to be targeted. Data for all five participants show increase in productivity when, and only when, intervention is introduced for the activity targeted first, although the increase for Daniel was significantly lower than for the other four participants. This trend demonstrates a functional relationship between the intervention and on-task behavior and illustrates the experimental logic of the multiple baseline design. Figure 4.12 also shows that there was an increase in productivity for the activity not targeted for the three of the four
<table>
<thead>
<tr>
<th></th>
<th>Baseline SW</th>
<th>Baseline BW</th>
<th>VBSR – Seatwork SW</th>
<th>VBSR – Seatwork BW</th>
<th>VBSR – Boardwork SW</th>
<th>VBSR – Boardwork BW</th>
<th>Intermittent VBSR SW</th>
<th>Intermittent VBSR BW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vicky</td>
<td>.3</td>
<td>1.1</td>
<td>3.1</td>
<td>7.7</td>
<td>5.0</td>
<td>8.7</td>
<td>3.9</td>
<td>9.7</td>
</tr>
<tr>
<td></td>
<td>(0-0.7)</td>
<td>(0-4.3)</td>
<td>(0-6.4)</td>
<td>(0.6-24.5)</td>
<td>(3.6-6.2)</td>
<td>(8.2-9.1)</td>
<td>(0.8-7.1)</td>
<td>(6.1-12.8)</td>
</tr>
<tr>
<td>Isaiah</td>
<td>0.4</td>
<td>0.4</td>
<td></td>
<td></td>
<td>0.9</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0-0.9)</td>
<td>(0-1.5)</td>
<td></td>
<td></td>
<td>(0-7.5)</td>
<td>(0-10.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daniel</td>
<td>2.6</td>
<td>3.5</td>
<td>4.2</td>
<td>4.0</td>
<td>3.7</td>
<td>4.3</td>
<td>4.4</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>(0.2-4.8)</td>
<td>(0.6-6.4)</td>
<td>(1.6-6.2)</td>
<td>(3.7-4.4)</td>
<td>(1.9-4.8)</td>
<td>(0.9-6.5)</td>
<td>(1.6-5.8)</td>
<td>(2.7-6.1)</td>
</tr>
<tr>
<td>Evan</td>
<td>1.3</td>
<td>6.7</td>
<td>3.4</td>
<td>5.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0-10.9)</td>
<td>(1.9-11.9)</td>
<td>(0-10.4)</td>
<td>(1.4-9.4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orion</td>
<td>6.7</td>
<td></td>
<td>9.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.6-34.2)</td>
<td></td>
<td>(1.6-28.6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.3 Mean (and range) of correct responses per minute for each participant during seatwork and boardwork sessions during each experimental condition. Data are rounded to the nearest tenth of a whole number.
Figure 4.12 Productivity for all participants across conditions
participants who engaged in both instructional activities. Finally, for the two participants who participated in intervention for their second activity, further increases are seen in productivity during that second activity once intervention was begun for that setting. However, for one of these students, productivity decreased in the setting that was targeted initially when intervention began in the second setting. This decrease was reversed during the final phase of the study.

Social Validity

Student Opinions

Results of the social validity student questionnaires are summarized in Table 4.4. 100% of the participants surveyed said that they enjoyed watching and scoring the videos of themselves and that they would like to participate in a similar activity during the next school year. However, one of the four students indicated that they preferred scoring “no” on their score sheets when asked if they liked scoring “yes” or “no” better. 100% of the participants also indicated that they believed they did more work while the intervention was in place. In order to gain more information the students were asked, “Is there any thing that could have been changed to help you complete even more work?” Two students answered that nothing should be changed. One student said that changes would have helped but was unable to clarify what he meant and the fourth student answered that it would have helped “If I didn’t hate doing boardwork.”

When the students were asked what they liked most about the intervention, three students said they most liked earning prizes and one student indicated that he liked the intervention because “it was like being in a movie.” Three of the four students indicated
that there was nothing they didn’t like about the intervention and one student indicated that the only thing he didn’t like was “when I didn’t do my work on the video.” Students were asked if there was anything additional they would like to say about participating in the study. Following are their narrative comments:

Vicky: “They were really neat (the prizes). It was cool to watch myself”
Daniel: “I like watching the videos”
Isaiah: “I want to pick out the fifth box again.”
Orion: “I liked the prizes and the video.”

<table>
<thead>
<tr>
<th></th>
<th>Did you like watching the videos?</th>
<th>Did you like scoring “yes” better?</th>
<th>Is there anything you didn’t like?</th>
<th>Did it help you to do more work?</th>
<th>Is there anything you would change?</th>
<th>Would you like to do it again?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vicky</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Daniel</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Isaiah</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Orion</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>75%</td>
<td>75%</td>
<td>100%</td>
<td>50%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.4 Student responses to social validity questions

**Teacher Opinions**

Results of the social validity questionnaire given to the regular education classroom teacher and the ratings of the video clips of participants before and after intervention are presented in this section.

**Classroom teacher survey.** On a scale of 1 (strongly disagree) to 5 (strongly agree) the classroom teacher reported the following with regard to the study:
The target behavior was age appropriate: 5

An increase in the target behavior would improve the participant’s academic performance: 5

The intervention was costly in terms of time: 1

Participation benefited the students: 5

It is a realistic intervention to use: 5

The results outweigh the time needed: 5

Necessary changes to the classroom were disruptive: 1

The classroom teacher reported to the experimenter that she felt the intervention was very effective for the students involved. She said that it was not inconvenient at all to have the video camera recording in her classroom or to rearrange the students’ desks to accommodate videotaping.

*Ratings of participants by current/future teachers.* Results of the ratings of participant video clips by 43 graduate students in special education are presented in Table 4.5. Mean, range, and mode of ratings for each participant are reported for baseline and intervention conditions. Overall, the participants were rated as likely to be more successful in a general education classroom after intervention. The mean for all participants was 2.4 during baseline with a range of one to four (a rating of 2 means somewhat unsuccessful in an inclusive general education classroom). The mean for all participants during video-based self-recording was 4.1 with a range of two to five (a rating of 4 means somewhat successful in an inclusive regular education classroom). Mean ratings for all five participants were higher for intervention video clips when compared to ratings for baseline video clips.
<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mode</td>
</tr>
<tr>
<td>Vicky</td>
<td>2.8</td>
<td>2</td>
</tr>
<tr>
<td>Isaiah</td>
<td>2.2</td>
<td>1</td>
</tr>
<tr>
<td>Daniel</td>
<td>2.8</td>
<td>3</td>
</tr>
<tr>
<td>Evan</td>
<td>1.9</td>
<td>1</td>
</tr>
<tr>
<td>Orion</td>
<td>2.4</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 4.5 Mean, range, and mode of ratings for each participant across conditions

Figure 4.13 Mean ratings by college students enrolled in an introduction to special education course of predicted success in a general education classroom based on viewing video clips of each student from baseline and the video-based self-recording (VBSR) conditions. Rating scale: 1 = very unsuccessful/not a good candidate for inclusion in a general education classroom, 2 = somewhat unsuccessful, 3 = neutral, 4 = somewhat successful in a general education classroom, 5 = very successful/no concerns about the student being included in a regular education classroom.
CHAPTER 5
DISCUSSION

This chapter addresses the results of the study investigating the effects of video self recording on students’ on-task behavior during independent work. Limitations of the study, results relative to the research questions, implications for practice, and suggestions for future research are discussed.

Limitations of the Study

The results of this study should be interpreted within the context of several limitations. These limitations include the participant characteristics, duration of the study, nature of the intervention package, and generalization and maintenance.

Participant Characteristics

The willingness of the participants to take part in this study, and specific characteristics about the participants should be considered when making generalizations about the study’s results to other teachers and students.

Teacher. The general education teacher whose students were participants in this study was willing to have children with special needs in her classroom, including a student with autism. She reported enjoying teaching these students and did not seem to be stressed by the additional special needs of the children in her classroom. The teacher generally had good classroom management skills and the students in her classroom
typically worked hard for her. She had a positive behavior management plan in place in her classroom. She had a large chart in her classroom and each child had a stack of colored cards on the chart. When students were “caught” doing the right thing they were told to “move their card up” a color. Verbal praise and other tangible rewards were consequences for the highest colors. Because the teacher had a very positive classroom overall and frequently looked for and rewarded appropriate behavior, the students in this study were able to access natural contingencies of reinforcement once their behavior improved as a result of the intervention.

*Students.* The characteristics of the students in this study also represent a limitation. All five participants had parents who expressed concern about their children’s behavior in school and were actively involved in their education. It is possible that some of the parents spoke to their children about the importance of being part of this study and the importance of behaving well in class. It is impossible to know how much communication took place between each student and his or her parents with regard to the study or the student’s performance.

The students chosen to participate in this study had the ability to complete the academic work that was being assigned but were not doing so. Students may also be off-task because the work being assigned is too difficult so the results of this study may not be directly applicable to such students. In addition, all of the participants in this study seemed to find social attention and small trinkets very rewarding (a reinforcer assessment was not conducted but anecdotally this seems to be the case). For some students, the small toys and attention from an adult may not function as a reinforcer and therefore the
intervention may not have been as effective if these factors contributed to the effectiveness. Because the intervention was a treatment package it is unknown the extent to which the reinforcement component contributed to the results, if at all.

Although all of the students in this study had disabilities, or were showing signs of academic and behavioral difficulty, their overall level of functioning was relatively high for students with special needs. Orion, the participant with the most significant disability (autism), was verbal and functioned academically at or above grade level. He also did not display self-stimulatory behavior and his inappropriate behaviors were limited to occasional crying and yelling. Other students in the study had occasional tantrums and aggressive behavior but overall they were high functioning students. Therefore, the effectiveness of this intervention with students who are more significantly disabled, especially with cognitive disabilities is unknown.

Duration of Study

The limited duration of the study also represents a limitation. Data collection began in March and ended in early June. The study was temporarily halted twice during this time by a 1-week school break and one week of school wide testing. In addition, student absences and the suspension of one student, Evan, decreased the total number of experimental sessions for some students. Only two of the students (Vicky and Daniel) had enough time for the intervention to be applied in more than one setting and then for systematic fading of the intervention to be started. The study was not long enough for the intervention to be completely faded out so that maintenance could be assessed.
An additional concern due to the short duration of the study is whether or not the improvements in behavior would have maintained even with the intervention in place. Evan and Isaiah’s on-task behavior fluctuated after initial gains. One possible explanation for the great degree of variation could be that the novelty of the intervention added to the initial increases and as they became accustomed to the intervention the effectiveness decreased. Without more time for data collection this prediction cannot be confirmed or denied.

*Treatment Package*

The intervention used in this investigation was a treatment package with several components. Students viewed videos of themselves, used a self-monitoring strategy when watching the videos, and received points, backup reinforcers, and verbal praise for self-recording and increases in their on-task behavior. In addition, the presence of a video camera in the classroom may have had an effect on student behavior. Within the context of the current study it is impossible to determine the contribution, if any, of these factors on the results. It is possible that the same results would have been obtained even if certain components had been omitted. No attempt was made during this study to separate the effects of each component from the cumulative effects of combining the components.

*Generalization Measures (video camera)*

Several limitations exist in the current study with regard to generalization and maintenance. As was mentioned previously, the duration of the study did not allow for maintenance measures with full removal of the intervention. Also, there were no
measures of student behavior on days when the video camera was not in the classroom. Anecdotal reports from the general education teacher suggest that on-task behavior was lower on days when the camera was not in the classroom. The camera may have been functioning as a discriminative stimulus for on-task behavior but data are not available to confirm this possibility.

Although generalization measures were taken during other times of the day in similar settings, no generalization measures were collected on the behavior of the participants during other classroom activities. In addition, one of the five participants (Isaiah) did not show generalization to other times of the school day as the other four participants did. No attempt was made to further increase the likelihood of generalization for this student. Also, generalization to productivity during targeted instructional times varied between participants.

Discussion of Results by Research Question

Research Question 1. What are the effects of video-based self-recording of on-task behavior during independent seatwork on participant behavior during independent seatwork during subsequent sessions of the instructional activity?

Data from the VBSR conditions implemented with all five participants suggest that this intervention resulted in an increase in on-task behavior during subsequent sessions of the same instructional activity. In other words, daily VBSR data revealed higher rates of on-task behavior than baseline conditions for all five students. Rates of on-task behavior increased when, and only when, the intervention was introduced for each student. Further improvements were seen in the second setting when intervention
was begun there for the two students who received intervention in more than one setting. These findings indicate a functional relationship between video-based self-recording and on-task behavior.

It is impossible to determine the exact cause of these increases in on-task behavior because of the nature of the intervention and because, with few exceptions, no immediate reinforcement of on-task behavior was observed in the general education setting. Several possible explanations could explain the changes observed in on-task behavior. First, viewing the videotapes could have functioned as instruction in how to behave during class. Following this instruction, the student may have been more able to remain on-task during independent seatwork and may have contacted natural contingencies of reinforcement for doing so, in the form of teacher praise and attention, and “moving up” on their color chart. Although the general education teacher maintained a positive classroom environment and provided a reinforcement system for appropriate behavior, it is unlikely that this alone was a strong enough consequence to maintain a newly learned behavior.

Another possible explanation for the increases in on-task behavior is that the participants came under the control of a verbal rule. The students may have established the rule, “If I do my work in class, I will get a high score when I self-record, and then I will get a prize.” The presence of the video camera may have functioned as a discriminative stimulus signaling that this rule was in effect on a given day. Some students, especially Vicky and Daniel, appeared to become uncomfortable when viewing their videos if they were off-task. This may have led to additional control of their
behavior by removal of an aversive condition related to the rule. If watching videos of off-task behavior was experienced as aversive, remaining on-task during subsequent sessions may have provided reinforcement by decreasing the likelihood that the video they watched the next day would include off-task behavior.

Research Question 2. What are the effects of video-based self-recording of on-task behavior during seatwork on participant productivity during subsequent sessions of the instructional activity?

The academic productivity of all five participants increased concurrently with their on-task behavior. The students’ productivity gains ranged from slight to moderate, with Orion and Evan demonstrating the smallest gains. However, for Vicky and Isaiah, whose baseline rates of productivity were at or near zero, academic productivity increased greatly following the implementation of VBSR. Daniel, whose baseline rate of productivity was slightly higher than the other participants also had an increase in productivity following VBSR for on-task behavior. Results from this study indicate that self-scoring of on-task behavior does have a positive effect on productivity for young elementary students during independent seatwork activities. This finding is in contrast to some previous studies that have shown in order to increase productivity, productivity must be monitored.

During VBSR, while watching their videos, students were unable to determine the amount of work they were actually completing. The student’s behavior in terms of body orientation, and movement of a writing utensil was visible on the video, but actual markings on the paper were not visible. At least one student (Isaiah) occasionally placed
his pencil on the paper and moved it around so that he would be scored as on-task but
was no more productive than he would have been if he had been off-task. Even though
this occurred during several sessions, overall his productivity was still higher following
intervention. Additionally, the accuracy of the students’ work did not decrease as their
productivity increased.

One further complication related to productivity occurred when several students
engaged in time consuming methods for completing their work. For example, Isaiah and
Daniel each counted on their fingers when completing addition and subtraction problems.
These methods resulted in a lower possible amount of work completion for these
students. Although the students were on-task, and were actually being productive, their
methods of work completion did not allow them to complete many problems during the
work period. Completed problems were the only type of productivity measures taken in
this study.

*Research Question 3. What are the effects of video-based self-recording of on-task
behavior from videotapes of participant behavior during independent seatwork on the on-
task behavior of the participants during times of the school day not represented in the
videos used for self-recording?*

Generalization measures were taken on four of the five participants in this study.
Following intervention, all four of these students demonstrated some level of
generalization of increased on-task behavior and in productivity in a second independent
work setting. For Isaiah, these gains only lasted for five sessions before his on-task
behavior in the generalization setting return to baseline levels of near zero. Interestingly,
during the sixth session of self-recording, Isaiah reported to the experimenter “My videos are always from boardwork so I know that is when I need to do more work!” Although there is no reason to believe that the other students did not realize their videos were all from the same time of day, no other students made a similar report.

Vicky showed a dramatic increase in on-task behavior in the generalization setting and Evan and Daniel showed more moderate levels of improvement. Differences in the amount of effects in the generalization setting could be explained by the fact that Evan and Daniel already had higher levels of on-task behavior in those settings while Vicky had near zero levels of responding during baseline. Generalization of productivity mimicked generalization of on-task behavior for all students – again supporting the claim that self-recording of on-task behavior can have a positive impact on productivity.

The generalization of behavior change observed in this study may be explained several ways. First, increases in on-task behavior and productivity may have enabled the students to contact natural contingencies of reinforcement. On-task behavior sometimes resulted in the students receiving positive reinforcement in the form of moving “up” a color on the classroom behavior management chart. In addition, off-task behavior was often punished by moving “down” a color and subsequently losing privileges such as specials and recess. Avoidance of these consequences may have led to increased generalization of the behavior. The general education teacher was frequently observed verbally praising the participants when they accomplished more work during a given seatwork period. This verbal praise may have functioned as a reinforcer in multiple settings.
An additional reason for generalization may have been that the students viewed videos of themselves in the actual setting where the behavior was expected. Because an analog environment was not used, there was no need to take additional measures for programming common stimuli. In addition, other than the type of work being completed and the time of day, the generalization setting was identical to the setting in which the intervention occurred. The use of delayed reinforcement may also help to explain the generalization observed in this study.

The use of indiscriminable contingencies of reinforcement was likely to have helped maintained the behavior change when the intervention was faded to every three days for two of the participants.

Research Question 4. How will current and future teachers rate the students before and after intervention in terms of the appropriateness of their behavior and their ability to function independently in general education classrooms?

43 students in a college course in special education rated the participants’ behavior during independent seatwork and boardwork from video clips taken from baseline and intervention sessions. These ratings showed an impressive difference in ratings for baseline and intervention conditions. All five participants were rated as more likely to be successful in an inclusion classroom during intervention. Because of the random manner in which video clips were selected for viewing it is likely that the raters had a fair view of the participants’ behavior. These findings are significant because many general education teachers have concerns about students with disabilities being placed in their classroom. Interventions such as video-based self-recording can help to
alleviate these concerns and to increase the likelihood that students with disabilities are successful in their inclusion placements.

*Research Question 5. How will teachers rate the intervention in terms of ease of use and effectiveness?*

In order for effective interventions to be used by classroom teachers they must be acceptable and the outcomes must make any inconveniences or extra work worthwhile. The participants in this study were all included in the same general education classroom. The teacher in this classroom felt that video-based self-recording was a worthwhile and effective intervention. She also reported that the changes she needed to make in her classroom for the study to occur were not an inconvenience.

Several factors may have influenced the teacher’s ratings of this intervention. First, she chose the students who would participate in the study based on their low levels of on-task behavior and high levels of disruptive behaviors. She may have been more aware of these students’ behaviors because of the disruptive nature of their off-task behavior. As the disruptive behaviors decreased the teacher may have noticed because of this increased awareness. This may have led to her report that the intervention was effective. Second, the intervention required no specific work from the general education teacher. The students’ self-recording was coordinated by the experimenter and all self-recording occurred in the special education classroom. Finally, the classroom teacher asked to see the graphs of participants’ results several times throughout the study. It is impossible to know how seeing the visual display of student outcomes affected her evaluation of the study, if at all.
Research Question 6. How will students rate the intervention in terms of effectiveness and acceptability?

All four study participants who participated in the social validity questionnaire reported that they enjoyed video-based self-recording, felt it was effective, and would like to participate in a similar activity next year. These findings indicate that video-based self-recording may be an intervention that students enjoy and find effective. None of the students indicated discomfort with viewing the videos, however, several times during the study two participants (Isaiah and Evan) showed signs of distress when their behavior on the videos was especially disruptive. Isaiah reported that he did enjoy watching himself on video despite this occasional distress but there is a possibility that he was answering in a way that he felt was correct, or it may be that overall it was a positive experience for him (Evan did not participate in the social validity questionnaire). There is the potential that other students would be disturbed by viewing their off-task behavior to the point that the intervention loses some social validity – however, this was not seen in the current study.

The responses by the students to the social validity questionnaire in this study are similar to findings of social validity assessments of other interventions used to improve behaviors related to self-determination (e.g., goal setting and attainment; self-observation, evaluation, and reinforcement; and independence). The feelings that the students may have had (e.g., pride, empowerment, control) as a result of gaining control
over their own behavior may have functioned as automatic reinforcement for the act of self-recording which may be one explanation for high student ratings of this intervention.

Implications for Practice

The results of this study indicate that video-based self-recording could be a useful tool in educational settings to increase on-task behavior and academic task completion by students with disabilities. It may be especially useful when a special education teacher needs an intervention that can be used with included students with disabilities but that does not require the general education teacher’s participation. Although the general education teacher must agree to have a video camera in her classroom, no further commitment of time or resources is needed. The results demonstrate that the intervention is effective for students in first grade with mild to moderate disabilities. Based on previous research video feedback and video-based self-monitoring, it is also likely that this intervention would be effective with older students with similar disabilities.

If a special education teacher decided to implement this type of intervention in her school there are several things to be considered. First, the general education classroom teacher that her students are in would need to be willing to have a video camera in her classroom. If the general education teacher did not agree to this, it is possible that the special education teacher could implement the procedures in a resource room but additional measures would then need to be taken to increase the likelihood of generalization to the general education classroom. The special education teacher should set up the resource room to make that setting as similar as possible to the general education classroom (e.g., for a setting similar to one in this study the student should be
sitting at an individual desk with other students in the room, the teacher should be occupied with other activities, and the work the student is completing should be the same work they would be completing in the general education classroom). Other tactics to increase the likelihood of generalization would be to ask the general education teacher to reinforce the student when the target behavior is exhibited in the generalization environment and to gradually fade the intervention in the resource room using indiscriminable contingencies.

Other considerations for implementing this intervention include the investment of time and resources. If the teacher does not have access to a video camera through her school, one would need to be obtained through other means. Although a digital camera was used in this study a regular video camera could also be used. The advantage of the digital camera is that playback and viewing can be done on a computer which most teachers have access to. With tradition video equipment, the teacher would need to have access to a television and VCR on a daily basis for playback.

An initial investment of time is needed to prepare materials such as star charts and self-monitoring score cards. A small amount of money is also needed if the teacher plans to use the backup rewards that were used in this study. The rewards in this study cost approximately 10 cents a piece for the smallest rewards and 1 dollar a piece for the larger rewards. In addition to the initial time requirement, the teacher must also be willing to meet with the students each day or have a system set up for the students to come down to her room and view and score their videos. In this study, video clips were chosen by the researcher each evening and transferred to CD-ROM for viewing by the students. It
would also be possible to randomly select a section of the video when the student comes
to view the video, which would save prep time for the teacher.

A final requirement that is important for teachers to consider is how they will
collect data on the student’s behavior. For this study, the experimenter watched student
videos for 3 hours per night in order to obtain enough data for a research investigation.
For educational purposes, this amount of data would not be required. However, the
teacher would need to have some way to objectively evaluate the effects of the
intervention on the student’s behavior. Productivity data is relatively simple to collect as
long as the teacher has access to the student’s work. On-task data could be collected on a
weekly basis from the videos or from live data collection by the general education
teacher. Data collection could be simplified with observation and measurement
techniques such as momentary time sampling. This could be done by the general
education teacher if she is engaged in an activity that allows her to momentarily pause
and rate the behavior a student. This could be accomplished by recording whether or not
the student is on-task each time a beep sounds from a pre-recorded beep tape.

Another implication for practice is illustrated by Isaiah’s comment that he knew
to be good during boardwork because his tapes always showed him during that time of
day. Although four of the five participants showed longer term generalization of
increased on-task behavior and productivity, the intervention may need to be altered for
students like Isaiah. One way to do this would be to video tape the student at random
times throughout the day when the target behavior is expected. The video camera used in
this study could have been operated by a remote control and there was no cue to show
that it was recording. A camera of this type could stay in the regular education classroom at be turned on by the special education teacher at various times during the day without the student knowing. This may increase the likelihood of the target behavior increasing across more settings.

A further implication for practice is demonstrated by the baseline conditions in this study. During baseline the participants knew they were being videotaped, met daily with the special education teacher, and reviewed the importance of being on-task and completing their work with the special education teacher. Many teachers expect students to follow a rule simply because they are told about it. As was the case in this study, there may even be consequences (both positive and negative) for following those rules. However, as is seen in the baseline levels of the students in this study, statement of the rules, and consequences for following those rules may not be enough to bring the behavior up to an acceptable level. Additionally, the added attention from the special education teacher was not enough to improve on-task behavior or productivity in the participants of this study.

Suggestions for Future Research

Generalization and Maintenance

Generalization and maintenance of behavior change resulting from video-based self-recording is an important area for further research. In the current study, three of the four participants showed generalization of on-task behavior and productivity to a second setting that was similar in context to the instructional setting. The percent of intervals on-task during that setting was further increased for two participants when intervention was
begun in that setting. Although generalization occurred, the results in the generalization setting were not as strong as the results in that setting when the intervention was applied. Additionally, for Isaiah, only short-term generalization to the second setting occurred.

Future studies should focus more specifically on tactics for increasing the likelihood and extent of generalization. The use of indiscriminable contingencies from an earlier point in the study may lead to greater generalization of results. The participants in this study quickly learned that they would only be asked to score videos from a given time of the day. By varying the time of day that video is taken, students may be more likely to improve their on-task behavior throughout the day. Researchers should investigate the effectiveness of introducing self-monitoring to several settings at once and alternating which setting the videos are viewed from.

An alternative procedure for increasing the likelihood of generalization might be to introduce self-monitoring into several settings, one at a time. Wood, Murdock, and Cronin (2002) investigated the effectiveness of self-monitoring for improving the academic behavior of “at-risk” middle school students. The authors found that increases in academic behavior were not observed in novel settings following the introduction of self-monitoring in one setting. Interestingly, generalization to novel settings was observed for all four participants after self-monitoring was introduced in three settings. Data were collected from six settings for each participant and all four participants showed generalization to the three remaining settings. The findings of the study by Wood, Murdock, and Cronin were not consistent of the findings of the current study in that generalization of behavior change was observed for four of the five participants in the
current study after self-monitoring was introduced in only one setting. The Wood, Murdock, and Cronin study did not involve the participants’ viewing videos of themselves and this difference is one possible explanation for the difference in results.

Maintenance of effects was not evaluated in this study due to time constraints. Therefore it is unknown whether or not the behavior changes would be maintained upon removal of the self-recording and/or upon removal of the video camera from the general education classroom. Anecdotal reports from the general education teacher imply that the video camera potentially became a discriminative stimulus for on-task behavior and therefore removal of the camera may have led to degradation of the behavior change.

For Vicky and Daniel, the frequency of viewing videos was faded to every third day by the end of the study. Their behavior gains maintained through this phase of fading but further fading was not possible. Future investigations should seek to further assess the feasibility of completely fading the intervention. This could be done by continuing to fade the scoring to once per week, once every other week, etc., until the student no longer needs to self-record. However, it is important to consider that some students’ gains may not maintain following the removal of the intervention. Self-monitoring is a tool that allows students to observe and evaluate their own behavior. It is also a tactic that many typical students and adults use on a daily basis (e.g. “to do” lists, daily planners, and journaling food intake) and therefore can be an important tool for those students who require continued support. For some students, fading of self-monitoring procedures may not be an important goal.
An additional problem to be investigated with regard to maintenance is the removal of the video camera. If the video camera does actually become a discriminative stimuli signaling when reinforcement is available for on-task behavior, removal of the camera would cause behavior to decrease. First, investigators should objectively measure whether or not this phenomenon occurs. The reports of such occurrences during this study were anecdotal in nature. Future researchers could measure this objectively by having unknown observers collect data in the classroom on days when the video camera is not present. This would need to be done during all phases of the study to demonstrate a functional relationship. If the students’ behavior does decrease upon removal of the camera, researchers should investigate tactics for increasing maintenance. One approach to this would be to set up a camera in a manner in which the students did not know whether or not the camera was present. For example, a camera could be hidden in the classroom so that the students did not see it. Another possible solution would be to use a small camera that is permanently mounted in the classroom. This way, there would be no need to fade the presence of the camera.

Components of the Intervention Package

The intervention used in this study was a treatment package that including the presence of a camera in the classroom, being videotaped, watching videotapes, instruction in self-recording and what on-task behavior looks like, setting goals, self-recording, leaving the regular education classroom to meet with a special education teacher, and receiving praise and tangible reinforcement for accurate self-recording and increased levels of on-task behavior. There was no attempt in this study to analyze the
different effects of most of these components on the participants’ behavior. Future investigations should attempt to determine which components of this package are necessary in order to obtain similar effects. If some components of the intervention package are not necessary for positive results it may be easier for teachers to implement the procedures in their own classrooms.

This study attempted to control for the effect of being videotaped and meeting with the special education teacher by including these two aspects in baseline conditions. A future study might begin with this arrangement and then during the first phase of the study only have the students watch their videos, but not provide a means for self-scoring and provide no contrived reinforcement for a particular performance. Another condition might involve watching the videos and self-scoring but not receiving contrived reinforcement. Finally, tangible reinforcers could be added to the treatment to determine their necessity. It would be important to have several participants begin in each condition in order to control for the passage of time and to examine the cumulative effect of adding different components to an existing intervention. It would also be important to analyze individual differences. It may be that different components of the intervention package are important for individual students. Implementing the intervention as a package may be the most efficient if this were the case.

*Students Characteristics*

Replications of the current study with students of different ages and ability levels would increase knowledge as to what types of students are most likely to benefit from this type of intervention. Age, cognitive ability, type of behavioral difficulties, and
parent support are all characteristics that may affect the outcomes of this type of intervention. Future studies should especially attempt to replicate the findings of this study with students who are younger and those with lower cognitive abilities. One proposed reason for the positive results of this intervention is the development of rule control. If rule control is responsible for changing behavior with this intervention then investigators should also determine the feasibility of using this type of intervention with nonverbal students. Additional research related to the participants might include the use of reinforcer assessments and functional analysis to determine the maintaining contingencies for off-task behavior. These assessments may help to explain differential outcomes among students.

**Reinforcer assessment.** Although each participant in this study showed improvement in on-task behavior and productivity the degree of change varied by student. Vicky and Daniel showed the greatest improvement, Orion needed additional intervention, and Evan and Isaiah had a great degree of variability in their behavior even after intervention. One possible explanation for these differences is that the same types of rewards did not function as reinforcement for the on-task behavior of each of the participants. Although anecdotal evidence suggests that the small rewards were preferred items (e.g., Isaiah became very excited when he earned rewards and could not wait to show his teacher and mom) they may not have been powerful enough, or directly enough connected to occurrences of on-task behavior to increase the behavior. Use of a reinforcer assessment prior to and during intervention would help to clarify the effect of rewards on the outcomes of the intervention. Using a reinforcer assessment could help
experimenters insure that the rewards they are using are actually reinforcing. If this issue is resolved and there is still a difference in outcomes, there are likely other factors leading to that difference.

*Functional assessment.* Prior to the start of an investigation, researchers should conduct a functional assessment to determine the maintaining contingencies for off-task, and on-task behavior. Determining these contingencies may help to explain differential outcomes and may indicate changes in the intervention for students who experience less success. For example, if a student engages in off-task behavior to gain teacher attention, the intervention may be successful because of the increased attention from the special education teacher and attention from the general education teacher when rewards are earned. If improvements were not seen for this type of student, the general education teacher could also be asked to provide more attention for on-task behavior following the beginning of intervention.

Conducting a functional assessment may also show that a student is off-task to avoid difficult demands. This may indicate that the work in the classroom is too difficult for the student. If this is the case, no amount of intervention is likely to increase the student’s productivity. Instead, the level of difficulty should be adjusted. Finally, some students may display off-task behavior during all phases of a functional analysis. In this case, the student may not have learned the skill of completing work independently. These students would be likely to benefit greatly from this intervention because they would see the change in their behavior through the video viewing.
Accuracy of Self-Recording

Students’ accuracy of self-recording in the current study was monitored by the experimenter. Four of five students were very accurate in their self-scoring (one student dropped below 80% one time and the other three were always above 80% accurate). The fifth student, Orion, had a high rate of inaccuracy in the beginning of intervention but following training about “telling the truth” his self-recording accuracy increased to above 80% and remained there for the rest of the study. Therefore, the results of the current study do not indicate whether or not it is important for students’ recording to be accurate.

Future studies may involve students who have a more difficult time evaluating their behavior, or who are more likely to be dishonest. In this case, it would be important to determine the effects of inaccurate self-recording on the outcomes of the intervention. Whether or not accuracy affects outcomes has implications for practice. If accuracy is essential to positive outcomes, teachers using this intervention would need to have procedures in place to insure that students are accurately recording their behavior.

Other Target Behaviors

The current study investigated the effects of video-based self-recording on the on-task behavior and productivity of students during independent seatwork activities. Previous studies investigated the effects of similar intervention on social skills of students with autism and behavior disorders. Future studies should investigate the utility of this intervention for other target behaviors. Possible classroom behaviors that could be
targeted include responding to teacher questions, following directions, transitioning between activities, seeking assistance, and participating in group responding. Other social behaviors could also be targeted such as sharing, greeting others, playing cooperatively, displaying good sportsmanship, and initiating conversation or interactions. Functional skills for students with more significant disabilities could also be targeted, including self help skills such as brushing teeth and household chores and community skills such as shopping for groceries and making a phone call.

Summary

This study investigated the effects of video-based self-recording (VBSR) on the on-task behavior and academic productivity of five first-grade students with disabilities during independent seatwork in a general education classroom. VBSR consisted of the student watching a 4-minute clip of video shot the day before while the student was doing independent work without direct teacher supervision. While watching the video, a beep sounded every 12 seconds (or the experimenter would pause the video as needed) and the student asked himself, “Was I doing my work?” If the student judged that he was doing his work when the beep sounded, he circled “yes” on the self-scoring card. If the student evaluated his behavior as off-task when the beep sounded, he circled “no.” After 20 intervals were completed in this manner the students counted their yes’s and recorded the total. If that total met or exceeded a preset goal, the student received a star on a chart. Stars were exchanged for rewards such as pieces of candy and small toys.

Five first grade students at an urban charter school participated in this study. The students had a variety of disabilities but were all included in general education classes.
For all five students, results showed that VBSR of on-task behavior resulted in higher levels of on-task behavior and increased productivity compared to pre-intervention baseline levels. Generalization measures were taken for four of the students. Three of the four students showed increases in on-task behavior and productivity in the generalization setting. The fourth student showed initial increases in the generalization setting but his on-task behavior in this setting soon returned to near zero baseline levels.

Intervention was introduced into the generalization setting for two of the four students, which resulted in further increases. For these two students VBSR was faded from once every day to once every three days. During the fading, both of these students maintained their higher levels of on-task behavior and productivity in both settings.

The findings of this study support and extend previous research on the effects of video-based interventions for students with disabilities. Video-based feedback and self-monitoring have been used in the past to teach athletic, communication, theatre, and social skills. In this study the intervention was used with younger students with a variety of disabilities. In addition, academic skills (on-task behavior and productivity) were measured. Increased measures of generalization were used and tactics to increase the likelihood of generalization were employed. The results of this study, and previous studies related to it, indicate that video-based self-recording is an effective tactic for special educators to use with their students. Future investigations should focus on replicating these findings with other students, enhancing generalization and maintenance of results, and analyzing the effects of individual components of the treatment package.
LIST OF REFERENCES


APPENDIX A

PARENT INFORMATION LETTERS AND CONSENT FORMS FOR PARENTS OF PARTICIPANTS
January 3, 2005

Dear Parent/Guardian:

My name is Michelle Anderson, and I am a graduate student in Special Education at The Ohio State University. One of the requirements for completing my program of study is to conduct a research project. I will be conducting my research under the supervision of my faculty advisor, Dr. William L. Heward, a professor in the College of Education, and Dr. Jacqueline Wynn, a psychologist at Children’s Hospital. I am writing to you to explain my research to you and to ask your permission to include your son/daughter in my study. The following is a description of the study I am planning to conduct and an explanation of your rights.

My study will use videotape feedback to increase the participation and on-task behavior of children in Kindergarten through 3rd grade during teacher-led group instruction and/or independent seatwork. Each day the children will be videotaped in their classrooms during group instruction and/or independent seatwork. After the videotapes are recorded, and during non-instructional times of the day, the students will meet one on one with me to review and score a 10-minute clip of the video. The students will be taught to self-record their own behavior as on-task or off-task. They will score their behavior while watching the video of themselves, using a checklist. At the end of the 10-minute video clip the students will add up their “on-task” marks and receive a point for each mark. The children can exchange their points for treats such as computer time, extra recess, a small piece of candy or snack, etc. In addition to the video clip that your child watches and scores, I will be watching and scoring video samples from different parts of the day in order to collect on-task behavior data throughout the school day. Also, your child’s daily seatwork and boardwork will be collected so that I can measure the amount of work they are completing.

Your son/daughter would be involved in scoring his/her videotapes for approximately 15 minutes per day, for 4-5 days per week. Your son/daughter will not miss any planned instructional activities to participate in this study. This observation of videotapes will only occur during non-instructional times. You are not in any way obligated to grant permission for your child to participate in this research and your child will not be penalized in any way for not participating. If your child does participate, you have the right to withdraw him/her from the study at any time without prejudice to you or your
child. During any session, if your child asks to stop or shows signs of wanting to stop, the session will be terminated. Please be assured that your child’s name will not be revealed in any publication, document, recording, computer storage, or any other form of report or presentation developed from this research.

Attached are two copies of the consent form. By signing this consent form you grant permission for your child to participate in this study. You should return a signed copy of the consent form in the stamped, return envelope and keep the second copy for your records. If you have any questions regarding this research or your rights related to participation in this research, feel free to call me at home at (614) 738-9009 or call Dr. Heward at (614) 292-3348. Thank you for your time.

Sincerely,

Michelle A. Anderson
Doctoral Candidate

William L. Heward
Professor and Faculty Advisor

Enclosures: 2 copies of Consent Form for Participation in Educational Research
Self-addressed stamped envelope
Parent/Guardian Consent Form For  
Participation in Educational Research

I agree to allow my child to participate in the research study titled “The Effects of Self-Recording of Academic Responding (or On-Task Behavior) from Videotaped Samples of Classroom Behavior on Academic Responding (or On-Task Behavior) By Elementary Students with Autism (protocol #2004B0383). Ms. Michelle Anderson will conduct this study under the supervision of Dr. William L. Heward. The nature and purpose of this study have been explained to me and I understand that instructional sessions will require approximately 15 minutes, 4-5 times per week at my child’s school.

I also grant permission to Ms. Anderson and Dr. Heward to videotape the research sessions for data collection purposes and to obtain test scores and other information from Great Western Academy to describe my child’s disability and current level of functioning for the purpose of writing the research report. I also give permission for my child’s teachers to complete questionnaires regarding the acceptability of the intervention and the significance of the outcomes, and for general education teachers to view video clips of my child to rate the level of improvement in the targeted behaviors. I understand my child’s and my own identity will not be revealed to anyone not directly involved in conducting this research, or by means of publication, documentation, computer storage, or any other form of report developed from this research. Additionally I understand that I may withdraw my consent for participation at any time.

__________________________
Child’s Name

__________________________
Signature of Parent/Guardian

__________________________
Michelle A. Anderson
Doctoral Candidate Researcher

__________________________
William L. Heward
Professor and Faculty Advisor
APPENDIX B

PARENT INFORMATION LETTERS AND CONSENT FORM FOR VIDEOTAPING
IN THE CLASSROOM
January 3, 2005

Dear Parent/Guardian:

My name is Michelle Anderson, and I am a graduate student in Special Education at The Ohio State University. I will be conducting a research study, under the supervision of my faculty adviser, Dr. William Heward, evaluating the participation of children with disabilities during academic activities in general education classrooms. This research will involve videotaping a child with disabilities in your son/daughter’s classroom. The video camera will be positioned as close as possible to the child with disabilities. It is possible that your child’s image will be briefly captured by the camera from time to time. However, your child will not be a participant in this research, and no information or data will be collected about your son/daughter. Furthermore, at the conclusion of the study all of the videotapes will be destroyed. Your son/daughter’s principal and classroom teacher are aware of, and in support of this study occurring in your child’s classroom.

Although your child is not a participant in this study, the Ohio State University’s Institutional Review Board, that must approve all research, requires the consent of parents of any child whose image may be captured on a videotape obtained for research purposes. Attached are two copies of the consent form for videotaping in your child’s classroom. By signing this form you grant permission for videotaping to occur in your child’s classroom. You should return a signed copy of the consent form to your child’s teacher and keep the second copy for your records. If you have any questions regarding this research feel free to call me at (614) 738-9009 or call Dr. Heward at (614) 292-3348. Thank you for your time.

Sincerely,

Michelle A. Anderson
Doctoral Candidate

William L. Heward
Professor and Faculty Advisor
Enclosures: 2 copies of consent form for use of video-taping
1 envelope
Parent/Guardian Consent Form for Use of Videotaping

I am aware that Michelle Anderson’s research (protocol #2004B0383) will be conducted in my child’s classroom. I understand that my child is not a participant in this study but that part of the intervention and data collection involves video taping the participant while he/she is in my child’s classroom. The video tape may include images of others in the classroom, including my child. I understand that no data will be collected on any one whose image is present on the video other than the target child and that the tapes will be destroyed upon completion of the study. I give my permission for the video equipment to be used in the presence of my child. I understand that I may withdraw my consent to allow videotaping to occur in my child’s presence at any time. If I have any questions with regard to this study, I can call Dr. William Heward at (614) 292-3348 or Michelle Anderson at (614) 738-9009.

___________________
Child’s Name

___________________                        _______________
Signature of Parent        Date

___________________                        _______________
Michelle A. Anderson        Date
PhD Student Researcher

___________________                        _______________
William L. Heward        Date
Professor and Faculty Advisor
The Ohio State University
APPENDIX C

TEACHER AND CLASSROOM AIDE CONSENT FORM FOR VIDEOTAPING
Teacher Consent Form for Use of Video Taping

I am aware that Michelle Anderson’s research study titled “The Effects of Self-Recording of Academic Responding (or On-Task Behavior) from Videotaped Samples of Classroom Behavior on Academic Responding (or On-Task Behavior) By Elementary Students with Autism (protocol #2004B0383) will be conducted with a student in my classroom. I understand that part of the intervention and data collection involves video taping the child while he/she is in my classroom. The video tape may include images of others in the classroom, including myself. I understand that no data will be collected on any one whose image is present on the video other than the target child and that the tapes will be destroyed upon completion of the study. I give my permission for the video equipment to be used in my classroom. I understand that I may withdraw my consent to allow videotaping to occur in my presence at any time. If I have any questions with regard to this study, I can call Dr. William Heward at (614) 292-3348 or Michelle Anderson at (614) 738-9009.

_____________________  _______________
Signature of Teacher        Date

_____________________  ________________
Michelle A. Anderson        Date
PhD Student Researcher

_____________________  _________________
William L. Heward        Date
Professor and Faculty Advisor
The Ohio State University
Aide Consent Form for Use of Video Taping

I am aware that Michelle Anderson’s research study titled “The Effects of Self-Recording of Academic Responding (or On-Task Behavior) from Videotaped Samples of Classroom Behavior on Academic Responding (or On-Task Behavior) By Elementary Students with Autism (protocol #2004B0383) will be conducted with a student with autism who I accompany to school. I understand that the students will be videotaped at various points during the school day, and that I will appear on these videos when I am helping the student. I understand that data will be collected from these videotapes with regard to my rates of prompting and reinforcement. This data will only be used to determine my rates of prompts and praise. This information will be provided to me when my rates are different from those agreed upon in the child’s behavior plan. No other data will be collected with regard to my behavior. I give my permission for the videotaping to occur in my presence and for Michelle Anderson to collect data on my rates of reinforcement and prompting. I understand that I may withdraw my consent to allow videotaping to occur in my presence at any time, and without negative consequences. If I have any questions with regard to this study, I can call Dr. William Heward at (614) 292-3348 or Michelle Anderson at (614) 738-9009.

_____________________      _______________
Signature of Aide        Date

_____________________      ________________
Michelle A. Anderson        Date
PhD Student Researcher

_____________________      ________________
William L. Heward        Date
Professor and Faculty Advisor
The Ohio State University

128
APPENDIX D

CONSENT FOR PARTICIPATION IN SOCIAL VALIDITY QUESTIONNAIRES
Parent/Teacher Consent form for Participation in the Social Validity Questionnaire

My student/a student in my class was a participant in Michelle Anderson’s study titled “The Effects of Self-Recording of Academic Responding (or On-Task Behavior) from Videotaped Samples of Classroom Behavior on Academic Responding (or On-Task Behavior) By Elementary Students with Autism (protocol #2004B0383). As a part of the follow-up to this study, Ms. Anderson is collecting data with regard to the behavior targeted and the observed results of the intervention. The nature and purpose of this questionnaire have been explained to me and I understand that completing the questionnaire will require approximately 15 minutes.

By signing below, I give my consent to participate in the social validity questionnaire. I understand my child’s and my own identity will not be revealed to anyone not directly involved in conducting this research, or by means of publication, documentation, computer storage, or any other form of report developed from this research. Additionally I understand that I may withdraw my consent for completing this survey at any time.

___________________________     __________________
Signature of Parent/Teacher       Date

____________________________     __________________
Michelle A. Anderson        Date
Doctoral Student Researcher

____________________________     __________________
William L. Heward        Date
Professor and Faculty Advisor
APPENDIX E

EXAMPLES OF SEATWORK COMPLETED BY PARTICIPANTS
Set H  [2+3, 3+2, 6+6]  Practice on facts through Set H

<table>
<thead>
<tr>
<th>3</th>
<th>0</th>
<th>2</th>
<th>9</th>
<th>6</th>
<th>1</th>
<th>5</th>
<th>1</th>
<th>1</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>+2</td>
<td>+5</td>
<td>+3</td>
<td>+1</td>
<td>+6</td>
<td>+8</td>
<td>+5</td>
<td>+7</td>
<td>+9</td>
<td>+4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>9</td>
<td>10</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>+6</td>
<td>+1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
<td>+5</td>
<td>+3</td>
<td>+0</td>
<td>+9</td>
<td>+1</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>9</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>+5</td>
<td>+9</td>
<td>+2</td>
<td>+1</td>
<td>+7</td>
<td>+6</td>
<td>+3</td>
<td>+1</td>
<td>+1</td>
<td>+2</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>+3</td>
<td>+0</td>
<td>+5</td>
<td>+2</td>
<td>+1</td>
<td>+6</td>
<td>+8</td>
<td>+3</td>
<td>+1</td>
<td>+1</td>
</tr>
</tbody>
</table>

One Minute Timing on facts through Set H

<table>
<thead>
<tr>
<th>1</th>
<th>3</th>
<th>0</th>
<th>6</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>5</th>
<th>1</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>+9</td>
<td>+2</td>
<td>+4</td>
<td>+6</td>
<td>+1</td>
<td>+3</td>
<td>+1</td>
<td>+5</td>
<td>+2</td>
<td>+1</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>8</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>+3</td>
<td>+3</td>
<td>+1</td>
<td>+1</td>
<td>+6</td>
<td>+8</td>
<td>+4</td>
<td>+7</td>
<td>+1</td>
<td>+2</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>+6</td>
<td>+8</td>
<td>+2</td>
<td>+1</td>
<td>+1</td>
<td>+5</td>
<td>+3</td>
<td>+4</td>
<td>+1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>9</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>+3</td>
<td>+4</td>
<td>+3</td>
<td>+1</td>
<td>+1</td>
<td>+6</td>
<td>+1</td>
<td>+5</td>
<td>+2</td>
<td>+1</td>
</tr>
</tbody>
</table>

1 minute timing goal __________  Number of problems correct __________
Find the Missing Numbers

Write the missing number.

A. \[
\begin{array}{c}
6 + 3 = 9 \\
5 + 3 = 8 \\
4 + 2 = 6 \\
2 + 7 = 9
\end{array}
\]

B. \[
\begin{array}{c}
9 + 1 = 10 \\
8 + 2 = 10 \\
7 + 1 = 8 \\
3 + 2 = 5
\end{array}
\]

C. \[
\begin{array}{c}
5 + 4 = 9 \\
3 + 4 = 7 \\
2 + 3 = 5 \\
2 + 2 = 4 \\
10 + 2 = 12 \\
5 + 1 = 6
\end{array}
\]

D. \[
\begin{array}{c}
5 + 2 = 7 \\
6 + 4 = 10 \\
7 + 9 = 16 \\
8 + 9 = 17 \\
4 + 7 = 11
\end{array}
\]

E. \[
\begin{array}{c}
3 + 2 = 5 \\
4 + 5 = 9 \\
5 + 4 = 9 \\
3 + 4 = 7 \\
6 + 3 = 9
\end{array}
\]

F. \[
\begin{array}{c}
7 + 4 = 11 \\
6 + 6 = 12 \\
7 + 7 = 14 \\
2 + 6 = 8 \\
10 + 7 = 17
\end{array}
\]
## Mastering Math Facts - Addition

### Set H [2+3, 3+2, 6+6]

Practice on facts through Set H

<p>| | | | | | | | | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+2</td>
<td>+3</td>
<td>+4</td>
<td>+5</td>
<td>+6</td>
<td>+7</td>
<td>+8</td>
<td>+9</td>
<td>+10</td>
<td>+11</td>
<td>+12</td>
<td>+13</td>
<td>+14</td>
<td>+15</td>
<td>+16</td>
<td>+17</td>
<td>+18</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>9</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>9</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>8</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>7</td>
<td>9</td>
<td>12</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>9</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>+3</td>
<td>+0</td>
<td>+5</td>
<td>+2</td>
<td>+1</td>
<td>+6</td>
<td>+8</td>
<td>+3</td>
<td>+1</td>
<td>+1</td>
<td>+3</td>
<td>+5</td>
<td>+7</td>
<td>+9</td>
<td>+1</td>
<td>+3</td>
<td>+1</td>
</tr>
</tbody>
</table>

### One Minute Timing on facts through Set H

<p>| | | | | | | | | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+9</td>
<td>+2</td>
<td>+4</td>
<td>+6</td>
<td>+1</td>
<td>+3</td>
<td>+1</td>
<td>+5</td>
<td>+2</td>
<td>+1</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>12</td>
<td>2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>8</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>9</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>9</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>10</td>
<td>7</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>10</td>
<td>7</td>
<td>5</td>
<td>10</td>
<td>3</td>
<td>10</td>
<td>3</td>
<td>10</td>
<td>3</td>
<td>10</td>
<td>3</td>
<td>10</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

1 minute timing goal _______ Number of problems correct _______
Adding Three-Digit Numbers

\[
\begin{array}{c}
593 \\
+246 \\
\hline
839
\end{array}
\]

Read each number sentence. Write the sum. (Remember – always start in the ones place!)

1. \[
\begin{array}{c}
188 \\
+10 \\
\hline
198
\end{array} \quad \begin{array}{c}
244 \\
+23 \\
\hline
267
\end{array} \quad \begin{array}{c}
852 \\
+34 \\
\hline
886
\end{array} \quad \begin{array}{c}
205 \\
+41 \\
\hline
246
\end{array}
\]

2. \[
\begin{array}{c}
428 \\
+23 \\
\hline
451
\end{array} \quad \begin{array}{c}
107 \\
+10 \\
\hline
117
\end{array} \quad \begin{array}{c}
314 \\
+48 \\
\hline
362
\end{array} \quad \begin{array}{c}
239 \\
+25 \\
\hline
264
\end{array}
\]

3. \[
\begin{array}{c}
132 \\
+400 \\
\hline
532
\end{array} \quad \begin{array}{c}
37 \\
+135 \\
\hline
172
\end{array} \quad \begin{array}{c}
650 \\
+125 \\
\hline
775
\end{array} \quad \begin{array}{c}
175 \\
+200 \\
\hline
375
\end{array}
\]

4. \[
\begin{array}{c}
125 \\
+470 \\
\hline
595
\end{array} \quad \begin{array}{c}
447 \\
+38 \\
\hline
485
\end{array} \quad \begin{array}{c}
436 \\
+45 \\
\hline
481
\end{array} \quad \begin{array}{c}
546 \\
+137 \\
\hline
683
\end{array}
\]
Lesson 81

<table>
<thead>
<tr>
<th>Clock</th>
<th>Clock</th>
<th>Clock</th>
<th>Clock</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:45</td>
<td>10:25</td>
<td>11:50</td>
<td>3:00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>476</th>
<th>386</th>
<th>709</th>
<th>863</th>
</tr>
</thead>
<tbody>
<tr>
<td>-475</td>
<td>-120</td>
<td>-205</td>
<td>-842</td>
</tr>
<tr>
<td>001</td>
<td>266</td>
<td>504</td>
<td>021</td>
</tr>
<tr>
<td>163</td>
<td>274</td>
<td>50</td>
<td>24</td>
</tr>
<tr>
<td>+502</td>
<td>+621</td>
<td>14</td>
<td>40</td>
</tr>
<tr>
<td>665</td>
<td>895</td>
<td>75</td>
<td>85</td>
</tr>
</tbody>
</table>

You have 10. You sell 9. How many do you end up with?

\[
\begin{array}{c}
10 \\
-9 \\
\hline
1
\end{array}
\]

You have 20. You find 10. How many do you end up with?

\[
\begin{array}{c}
20 \\
+10 \\
\hline
30
\end{array}
\]

You have 10. You give away 2. How many do you end up with?

\[
\begin{array}{c}
10 \\
-2 \\
\hline
8
\end{array}
\]

You have 60. You buy 11. How many do you end up with?

\[
\begin{array}{c}
60 \\
-11 \\
\hline
49
\end{array}
\]
APPENDIX F

EXAMPLES OF BOARDWORK COMPLETED BY PARTICIPANTS
A rock was in love with a tree. But the tree was tall and the rock was small. Then, one day the wind began to blow very hard. The wind bent the tree down to the ground. When it came near the rock, the rock gave the tree a kiss.

1. Who is in love with the tree? The rock. 2. What bent the tree down? The wind. 2. What did the rock give the tree? A kiss.

10. Today a
A bug and a dog sat by the side of the road. A bug sat by the lake. A bug and a dog sat by the lake. A bug sat by the lake. How can I go to the lake?
A. 12 - 9 = 4
   17 - 9 = 8
   12 - 9 = 3

B. 9 x 6 = 54
   9 x 6 = 54

2. 87 - 25 - 10
   52 - 2 = 45
Mr. Sid P. Frank wrote the book for me in March 1973. 

Evan

4/5/06

A little shark was trying to swim. A fish came up and asked, "Can I give you a hand?" The shark said, "Fish don't have hands. They have fins." He added, "And no fish have handles."
APPENDIX G

DATA SHEETS (BLANK AND COMPLETED)
<table>
<thead>
<tr>
<th></th>
<th>Orion</th>
<th>Daniel</th>
<th>Vicky</th>
<th>Isaiah</th>
<th>Evan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>7</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>8</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>9</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>12</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>14</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>15</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>16</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>17</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>18</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>19</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>20</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**PRODUCTIVITY**

<table>
<thead>
<tr>
<th></th>
<th>Orion</th>
<th>Daniel</th>
<th>Vicky</th>
<th>Isaiah</th>
<th>Evan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responses/Minute</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Date: 4/15  Activity: Reading  Target Behavior: OT

### ON-TASK/ACADEMIC RESPONDING

<table>
<thead>
<tr>
<th></th>
<th>Orion 8th-9th</th>
<th>Daniel 9th-10th</th>
<th>Victoria 9th-10th</th>
<th>Isaiah 9th-10th</th>
<th>Evan 9th-10th</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>2 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>3 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>4 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>5 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>6 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>7 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>8 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>9 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>10 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>11 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>12 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>13 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>14 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>15 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>16 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>17 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>18 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>19 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>20 N</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
<td>Yes (No)</td>
</tr>
</tbody>
</table>

### PRODUCTIVITY

<table>
<thead>
<tr>
<th></th>
<th>Orion 8th-9th</th>
<th>Daniel 9th-10th</th>
<th>Victoria 9th-10th</th>
<th>Isaiah 9th-10th</th>
<th>Evan 9th-10th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total responses</td>
<td>201</td>
<td>98</td>
<td>9</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Correct responses</td>
<td>197</td>
<td>98</td>
<td>9</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Minutes</td>
<td>26</td>
<td>21</td>
<td>9</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Responses/Minute</td>
<td>7.7</td>
<td>4.7</td>
<td>.9</td>
<td>.2</td>
<td>.0</td>
</tr>
</tbody>
</table>
Name: __________________ Date: _______

*** Was I doing my work? ***

<table>
<thead>
<tr>
<th></th>
<th>Yes 😊</th>
<th>No 😞</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>2</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>3</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>4</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>5</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>6</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>7</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>8</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>9</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>10</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>11</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>12</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>13</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>14</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>15</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>16</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>17</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>18</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>19</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>20</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
</tbody>
</table>

TOTAL

Goal
<table>
<thead>
<tr>
<th></th>
<th>Yes 😊</th>
<th>No 😞</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>2</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>3</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>4</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>5</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>6</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>7</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>8</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>9</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>10</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>11</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>12</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>13</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>14</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>15</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>16</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>17</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>18</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>19</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td>20</td>
<td>Yes 😊</td>
<td>No 😞</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>18</td>
<td></td>
</tr>
<tr>
<td><strong>Goal</strong></td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX I

STAR CHART
<table>
<thead>
<tr>
<th>Star Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> *</td>
</tr>
<tr>
<td>Vicky</td>
</tr>
<tr>
<td>Isaiah</td>
</tr>
<tr>
<td>Daniel</td>
</tr>
<tr>
<td>Evan</td>
</tr>
<tr>
<td>Orion</td>
</tr>
</tbody>
</table>

149
APPENDIX J

SCRIPT FOR TEACHING SELF-MONITORING
Experimenter: Now we’re going to play the game we talked about. First we’re going to practice scoring your videos. Does that sound like something you’d like to do?

Student: Yes

Experimenter: I am going to play some video of you during seatwork this morning. You should watch the video to see if you were doing your work. When I stop the video you need to decide if you were doing your work or not, right at that moment when I stop it. There are two things to look for when I stop the video: do you have your paper on your desk and are your eyes on the board or your paper? If you are doing both of those things, you are doing your work. Listen again: paper on desk and eyes on board or paper. Get ready to say them with me. How do you know you’re doing your work?

(signal)

Student and experimenter: paper on desk, eyes on board or paper.

Experimenter: Great job! Your turn to tell me on your own. How do you know you’re doing your work? (signal)

Student: paper on desk, eyes on board or paper.

Experimenter: Excellent. If your paper is on your desk and you are looking at the board, are you doing your work?

Student: Yes!

Experimenter: Perfect! If your paper is on your desk and you are looking at the reading group, are you doing your work?

Student: No.

Experimenter: Exactly! If you are looking at the board and there is no paper on your desk, are you doing your work?

Student: No.

Experimenter: You’ve got it! Now you are ready to watch the video! (plays video for ten seconds and then pauses video). Okay, let’s look at what you’re doing and answer our questions. Is your paper on your desk?

Student: Yes

Experimenter: Right. And where are you looking?

Student: At the board to read the problems.

Experimenter: So are you doing your work?

Student: Yes

Experimenter: (repeats video with both on and off task examples until the student can correctly identify when they are working without individual questions).

Experimenter: You’ve really got this! Now we are going to practice scoring on your score sheet. When I stop the video, you will decide whether or not you are doing you’re work. If you are, circle the “yes” next to number one. If you are not doing your work, circle the “no” next to number one. Then we will move to number two. Get ready! (plays video and stops it after 10 seconds). Are you doing your work?

Student: Yes

Experimenter: Perfect. So will you circle yes or no?

Student: Yes!
Experimenter: Exactly – go ahead and circle it!
Student: (circles yes)
Experimenter: Okay, let’s practice some more. (plays video and stops at various points until student is correctly scoring on score sheet).
Student: (scores video using score sheet),
Experimenter: Okay, there is only one more thing we need to learn! At the bottom of your score sheet there are two more spaces. One space says “goal” and it has a number in it. The other space says “total” and it is blank. What is your goal?
Student: Twelve
Experimenter: That’s right. That means that you need to have “yes” circled at least twelve times to earn your star. What does the twelve mean? (signal)
Student: I need to get 12 yes’s to win my star.
Experimenter: Perfect. So, go ahead and count how many yes’s you circled.
Student: (counts). FOURTEEN!
Experimenter: Wonderful! Did you meet your goal?
Student: Yes.
Experimenter: So you get a star – do you remember what that means?
Student: I can pick a prize from the 1 star bin!!
Experimenter: Great work! You can pick a prize and go back to class. We’ll play again tomorrow!
APPENDIX K

SOCIAL VALIDITY QUESTIONNAIRE FOR TEACHER
Social Validity Questionnaire for Teachers
(1=strongly agree, 3=neutral, 5=strongly disagree)

The target behavior is an age appropriate expectation.

1  2  3  4  5

An increase in the target behavior will improve the academic performance of the participant.

1  2  3  4  5

The level of the target behavior at the start of the study affected the participant’s ability to access the general education curriculum.

1  2  3  4  5

The intervention was costly in terms of time.

1  2  3  4  5

Participation in this study has benefited the participant.

1  2  3  4  5

This is a realistic intervention for special education teachers to use.

1  2  3  4  5

The results of this intervention outweigh the time needed to conduct the intervention.

1  2  3  4  5
APPENDIX L

SOCIAL VALIDITY QUESTIONNAIRE FOR PARTICIPANTS
Social Validity Questionnaire for Participants

Student Name: _______________________________

1. Did you like watching video of yourself with Ms. Anderson?

2. Did you prefer scoring “yes” or “no” for doing your work?

3. What did you like most about watching and scoring the videos?

4. Was there anything you didn’t like?

5. Do you think you did more work after you started watching yourself on video?

6. Are there any changes that would have helped you do even more work?

7. Would you like to watch yourself on video next year too?

8. Is there anything else you want to say about being in this study?
APPENDIX M

SOCIAL VALIDITY FORM FOR RATING VIDEO CLIPS
Social Validity Form for Video Clips
Directions: For each 20-second video clip, rate the relative level of success you feel the child would have in a general education classroom. Use a scale of 1-5 (1=very unsuccessful/not a good candidate for inclusion in a general education classroom, 2=somewhat unsuccessful, 3=neutral, 4=somewhat successful, 5=very successful/no concerns with regard to inclusion in a general education classroom).

<table>
<thead>
<tr>
<th>Clip</th>
<th>Rating</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>