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Academic perseverance: establishing on-task behaviors through self-monitoring

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ACADEMIC PERSERVERENCE: ESTABLISHING ON-TASK BEHAVIORS THROUGH SELF-MONITORING

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Dedication

I would like to dedicate this thesis to my Husband, Paul J. Arno Jr.

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I would like to express my thanks to my professors at Rowan University especially Dr. Lee who ignited my love of writing and Dr Xin for having patience in guiding me through my research

Abstract

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The purposes of this study were to (a) examine the effectiveness of using an iPad for self-monitoring of secondary students Classified with an emotional disturbance, (b) evaluate their behavior changes (c) evaluate their academic performance, and (d) evaluate their satisfaction with an iPad used for their self-monitoring. Three high school students, two female and one male with emotional disturbance (ED), participated in the study. A single subject design with ABAB phases was used. During the baseline, their behaviors including asking relevant questions, maintaining eye contact with the teacher or task, keeping conversation on topic, and working on current project were observed and recorded. During the intervention, an iPad was introduced to students with monitoring app called HabitRPG. Students were taught to record their on- task behaviors every five minutes during that interval for 5 days, then the iPad was taken away for 3 days, and resumed for 4 days to evaluate their behavior changes. Results show that all students increased on-task behaviors. At the end survey demonstrated that the intervention was socially accepted by both students and teacher. Further research with longer duration for self-monitoring using technology may need to support high school students with ED.

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Chapter 1

Introduction

Statement of the Problem

Academic perseverance refers to the ability to set future goals and the practice of self-control, leading a student to engage in completing assignments regardless of the perceived difficulty (Duckworth, Gendler, & Gross, 2014). The practice of on-task behavior is considered an integral part of developing one's academic perseverance. This display of self- control to stay on task means students have to learn to overcome academic obstacles in order to develop the skills needed to learn higher level of knowledge and process as well as challenge themselves further in their lives. Students must develop metacognition which means that they become aware of their own behaviors and how their behaviors impact not only their immediate circumstances but the future as well (Duckworth, et. al. 2014). Individuals who can stay on task are those who are able to exhibit better self-control in school, have a better wellbeing in adulthood and positive life outcomes when they grow up (Duckworth, et al. 2014). Students classified with emotional disorders that manifest in behavioral disorders often struggle with academic tasks (Rafferty & Raimondi 2009). Their behaviors inhibit their engagement in academic lessons thus impeding their success in school.

Emotional disturbance (ED) is defined in IDEA (2004) as, "a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance; a) An inability to learn that cannot be explained by intellectual, sensory, or health factors; b) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers; c)

Inappropriate types of behavior or feelings under normal circumstances; d) A general pervasive mood of unhappiness or depression; and e) A tendency to develop physical symptoms or fears associated with personal or school problems." These students often demonstrate inappropriate behaviors such as, calling out, talking out of turn, impulsive behaviors, violent reactions, aggression, short attention spans, distractibility, work avoidance, anxiety, withdraw from class, and poor coping skills that not only impact their own learning, but also disrupt their peers in classroom according to the NICHCY Disability Fact Sheet #5 (2010 p.2).

Self- monitoring refers to a two part strategy consisting of, "self- observation and self- recording" (Amato-Zech 2006, p. 211). Students are prompted either by a proctor, audible chime, or other means to note their behavior during an interval of time. This method helps students become aware of their behaviors, and hopes to trigger a response of change. The only way to make changes in behavior is to first become self-aware. After students are aware of how often they are engaging in off-task behaviors, they would concentrate on improving. Thus, self- monitoring is one of the more popular and successful strategies for increasing on- task behaviors (Duckworth, et. al. 2014). Reviewing research, it is found that majority of the studies regarding self- monitoring has greatly improved participating students' on- task behaviors but only focused on elementary school children (e.g., Amato-Zech, Hoff, & Dopeke, 2006; Crum, 2004; King, Radley, Jenson, Clark, & O'Neill, 2014; Szwed & Bouck, 2013, Flower, 2014). The finding may raise a question about how this intervention can help secondary students? This tendency might be that younger students are more receptive to intervention

or are more accessible than the older students at the secondary levels. It is necessary to provide self-monitoring for secondary students to evaluate its effect.

One of the benefits of this strategy is that students can perform self- monitoring independently. After a student learns to monitor his/her own behaviors, ideally he/she can deploy this strategy in any setting and environment without requiring additional assistance (Amato-Zech, Hoff, & Dopeke, 2006). This makes self-monitoring a popular intervention with teachers as few resources and little energy is needed for implementation. It is found that self-monitoring was provided for students with ED (e.g. Amato-Zech, Hoff, & Dopeke, 2006; Axelrod, Zhe, Haugen, & Klein, 2009; Crum, 2004; Szwed & Bouck, 2013; Rafferty, Raimondi, 2009; Kelly &Shogren, 2014) in both elementary and secondary settings. All students in these studies were able to increase on-task behaviors while participating in self-monitoring process.

It is found that traditional paper and pen/pencil were used to record behavior occurrences in majority of self- monitoring interventions. Although it is easy to ask students filling out paperwork, they are not as enticed as using electronic devices for similar tasks. In the 21st century, American students are involved in a digital culture, and embracing the new formats as a means of engaging students in class activities seems important. Technology, such as mobile devices, iPods and iPads can be incorporated into self-monitoring. Recent research using such mobile devices were found that both students and teachers experienced benefits in the classroom and the technology is well received (Flower, 2014; Blood, Johnson, Ridenour, Simmons, & Crouch, 2011). IPads and iPods can be used as engaging tools to keep students interested in independent practice or as an instrument to keep track of behaviors (Flower, 2014). However, mobile devices in self -

monitoring is limited because the technology is still fairly new and applications are in various stages of development. To date, little research has been found to use electronic devices such as iPads in behavior management, especially for high school students. Using technology may be a new adventure in classroom behavior management, especially in self-monitoring process.

Significance of the Study

Using an electronic device to promote self- monitoring of students with disabilities seems unique to add information to the previous studies. This study explores a way to integrate technology such as iPad, a mobile device, into classroom management and student's behavior management. An iPad plus HabitRPG app is used to replace the recording sheet or checklist for students to fill in by hand, though effective results were found using pencil and paper in previous studies (e.g. Axelrod, Zhe, Haugen, & Klein, 2009; Amato-Zech, Hoff, & Dopeke, 2006; Crum, 2004; Graham-Day & Gardener, III, Hsin, 2010; King, Radley, Jenson, Clark, & O'Neill, 2014). It is noted that repurposing classroom technology for self-monitoring was not only successful for students but also enjoyable (Szwed & Bouck, 2013). In addition, the focus on high school students classified with ED as samples in this study may fill the gap of limited research on secondary students for self-monitoring to add information in the field of behavior management and adolescents with special needs.

Purpose of the Study

The purposes of this study are to: (a) examine the effectiveness of using an iPad for self-monitoring of secondary students with ED, (b) evaluate their behavior changes (c) evaluate their academic performance, and (d) evaluate their satisfaction with an iPad used for their self-monitoring.

Research questions. Research questions of this study are presented as follows:

1. Will students with ED increase on- task behaviors in class through the use of an iPad for self- monitoring?
2. Will students with ED increase their academic grades/scores with the use of an iPad for self- monitoring?
3. Will students with ED and educational staff be satisfied with the use of an iPad for self -monitoring in the classroom?

Chapter 2

Review of the Literature

An on-task behavior can be defined as the desirable behavior of focusing on the task or goal. For example, such behaviors are maintaining an eye contact with the teacher/instructor, staying in assigned seat/area, keeping conversation on topics, performing requested assignments, asking relevant questions, and being attentively participating in class activities. Sometimes, providing examples of off- task behaviors provides a clearer picture of what was evaluated about student performance in class. Examples of off task behaviors including talking out of turn, fidgeting with objects, disrupting other students, leaving assigned area, inattentiveness, non- compliance, and passive disengagement were often observed. All of these behaviors can be grouped into three distinct categories; off-task motor, off- task verbal, and off-task passive behaviors (Amato-Zech, Hoff, & Dopeke, 2006).

In the past, majority of research with the goal of increasing on-task behaviors in actuality measure instances of off-task behaviors rather than the desired behaviors (e.g., Amato-Zech, Hoff, & Dopeke, 2006; Axelrod, Zhe, Haugen, & Klein,2009; Crum, 2004; Graham-Day & Gardener, III, Hsin, 2010; King, Radley, Jenson, Clark, & O'Neill, 2014; Szwed & Bouck, 2013). Research designs using whole and partial interval observations required observers to note instances of off- task behaviors rather than the desired. Once an off- task behavior is noted in that interval, whether it is 10 seconds or 3 minutes, the student is marked as being off task. This method negates any instances of on- task behaviors that occurred during that interval. Meanwhile, most research did not account

for student's own observations of their behaviors within the resulting data. The act itself of self- monitoring produces the desired effect on achieving on-task behaviors than the actual data collected by the student. This chapter reviews intervention strategies to increase appropriate behaviors of students with ED, especially self-monitoring.

Methods of Achieving On-Task Behavior

Suggested strategies for achieving self- control to stay on task are divided into five types, including situational selection, situation modification, attentional deployment, cognitive change and response modulation (Duckworth et. al., 2014). Students can try to stay on task through choosing a physical setting that is conducive for study, changing the setting they are in to enhance study, actively altering their focus on their study, or changing their internal perceptions about staying focused. Self- monitoring is part of the attentional deployment category, which stresses choosing to focus on the desired objectives rather than giving into the temptation of distraction. Having students choose to change their behavior with internal motivation is much more powerful than having extrinsic or external forces imposed on them (Duckworth, et. al., 2014) .

Self-monitoring. Self- monitoring is a process that involves an individual to observe his or her own behavior and recording it during a stated interval. This process helps build metacognition and ultimately obtain the goal of self- control. In theory, once students become aware of their behaviors, they can then choose to participate and take an active role in their education (Duckworth, et.al, 2014).

During the self-monitoring process, the participating student is first educated in what behaviors are desirable and expected. Then, a recording sheet developed by the

teacher is presented, and the student is taught to record his/her own behavior. A specific time interval is set for the recording session. Some researchers used intervals as small as 10 seconds while others extended to 10 minutes. The student is signaled to record his/her behavior with some sort of external stimuli. These stimuli can include an auditory signal such as a chime, a visual signal like a hand gesture from a proctor, or a sensory signal like a vibrating device. It is found that the auditory signals can be distracting for other students in the vicinity, thus, choosing something less intrusive like the visual or vibrating signals should be considered (Graham-Day et. al., 2010; Amato-Zech et. al., 2006).

A popular type of recording with self- monitoring is interval recording. Often, either whole interval or partial interval recording was used. Whole interval recording was suggested for the shorter durations of time because the behavior needs to occur for the entire interval. An example would be recording if off task behavior occurs during 10 second intervals within a 15 minute time frame. Partial recording is used for longer sections of time, such as a 3-5 minute intervals where the observer marks "yes" or "no" if the behavior occurred any time during the interval.

Effects of self-monitoring. Self- monitoring seems easy for teachers to implement in the classroom, and students, observers, and teaching staff accept self-monitoring as a practical intervention (e.g., Szwed et. al., 2013; Axelrod et. al., 2006; Graham-Daye et. al. 2010; King et. al. 2014). It can be used in almost any setting by any student who is capable of recording and counting numbers. Students are involved in the activity to record their behaviors, therefore, they accept self- monitoring. During the process of self- monitoring, they learn the appropriate behaviors expected, learn to

enhance their independence and self-control (Crum, 2004) and raise their self- awareness (King et al, 2014; Duckworth, et. al., 2014).

Research also indicated that the intervention of self- monitoring greatly increased instances of desired behaviors, such as on-task behavior, and the students made significant gains during the intervention (e.g., Amato-Zech, Hoff, & Dopeke, 2006; Axelrod, Zhe, Haugen, & Klein,2009; Crum, 2004; Graham-Day & Gardener, III, Hsin, 2010; King, Radley, Jenson, Clark, & O'Neill, 2014; Szwed & Bouck, 2013).

Kelly and Shogren's study (2014) examined the effects of a model called the Self-Determined Learning Model of Instruction (SDLMI) on the on-task behaviors of high schools students with emotional and behavioral disorders (EBD). As indicated by Carter et al. (2006) these students were to self-regulate their behavior.

Four students from two different high schools located in midsize suburban school districts in the southwestern area were involved. They all had a diagnosis of EBD as well as other classifications such as specific learning disabilities and attention deficient disorders.

Three dependent variables were measured including on-task and off-task behaviors which were individually defined with each student, and goal attainment scaling (GAS). The students were taught to create behavioral goals and identify five possible outcomes to reach the goal.

Recording videos of the students for a ten minute segment, 2-3 times a week in the general education classroom was used for data collection. Ten second intervals were adopted to observe and record each student's on and off task behaviors. Interestingly enough as indicated in their report, on- and off- task behaviors were not considered to be

"mutually exclusive during a given interval, which allowed on- and off- task behaviors to be coded in the same interval regardless of which behavior occurred first" (p.31). Data was collected for 25 weeks. For comparison purposes a probe was conducted in a non-targeted population to observe the effects of the SDLMI.

A multiple baseline across the participants was used in the study. After collecting the first baseline data, instruction of the SDLMI was given for one period. There were three phases in the program. Phase one addressed the question of "what is my goal?" Phase two addressed "what is my plan?" during which students were required to develop an action plan as well as self-monitoring. Phase three had students answer the question, "what have I learned" where students evaluated the processes and reflected on the individual action plans previously developed. A follow-up maintenance phase was continued but the students did not receive any more instruction or feedback to evaluate their learning outcomes.

The results showed that all students increased their on-task behaviors with the implementation of the SDLMI model, and also generalized their on-task behaviors into other class settings. They met or exceeded their goal setting evaluation scores. As their teachers found, these students increased their assignment completion and active participation in class to improve their attendance and grades. It appears that using individualized definitions of desired behaviors and goal setting greatly helps students with EDB manage their own behaviors in class. All the students involved in their self-monitoring process valued their experience and planned to use the tactics learned in their future.

Graham-Day et. al.'s study (2010) found similar results using pen and paper recording techniques with self-monitoring of high school students with ADHD. Three students, two male and one female in a study hall participated. The single subject research design of ABC phases were used including baseline, intervention, and intervention plus reinforcement.

Dependent variables in this study included not only measuring on-task behavior, but an academic achievement as well as student/teacher satisfaction. The baseline data in 10 second intervals were recorded using headphones and a recorded prompt. The intervention continued to collect data by the students using a checklist with 15 prompts in a 20 minute time frame to record their on or off-task. The last phase including the intervention plus a small reward was provided if a student's accuracy of recording matched with the researcher's. The results showed that self- monitoring could increase student's on-task behavior, while one student needed additional external motivation to increase on-task behaviors and no correlation between on-task behavior and improved grades was found. It appears that to being on-task does not mean necessarily studying properly or being engaged in academic studies.

The limitation was that the measurement of on- task behaviors was not directly related to student learning outcomes. Students may be displaying on- task behaviors but not truly and mentally on task. For example, a student may be looking at the teacher or assignment but still day dreaming. It is found that most research only measured the observable behaviors without considering academic performance that is the most important for the purpose of behavior changes.

An additional study to examine the effects of self-monitoring on students with ED was conducted by Ratterty and Raymond (2009). Both self-monitoring attention (SMA) and performance (SMP) of three 3rd graders, one female and two males, classified as ED were evaluated, and compared to one male 3rd and one male 2nd grader in the control group.

The study took place in two self- contained elementary math classrooms. After obtaining baseline data, the desired attention and performance were defined for students. A counterbalanced, multiple-baseline design was used to observe and gather data on the effect of SMA and SMP. In 15 minutes of time period with each interval of 5 seconds, students on-task behaviors were observed, then they were instructed to self-monitor at five minute intervals and cued by a tape recorded tone. They were guided to fill out a self- monitoring card to answer the question, e.g., if they were doing their work. They were also trained to count the number of math problems completed correctly and graph the results. Lastly, they were asked to select either SMA or SMP.

The academic performance of the participants was measured through the number of math problems completed and the number of problems completed correctly. It was found that the students performed better during the SMP condition than the SMA. Both SMA and SMP conditions helped improve their on-task behavior, though desired behaviors were higher during the SMP condition. It was also noted that the students preferred the performance monitoring over the attention monitoring. However, it is found the frequent cues distracting during their math practice, though it does show that when students with EBD are trained to self-monitor their behaviors of both academics and attention, they performed better and their on-task behaviors were improved.

Further study of a self-monitoring intervention for an elementary student was found in Crum's study (2004). In this study , a 8 years old student with BD participated, and self- monitoring combined with goal setting was provided. Within the short span of 15 days, the student was able to manage his own behavior. Although this study is very limited due to the small sample size and short intervention span, it shows that after the student learned the self-monitoring process, he was able to obtain his materials and independently monitor his behavior without prompting.

Self-monitoring using technology. Using a digital device in self-monitoring to help students increase their homework completion was noted in Axelrod et. al.'s study (2009). Four adolescent males and one female participated. All were residents in a large treatment program for adolescents with behavioral problems with a dual diagnosis of ADHD and another behavioral disorder. The students were referred due to their issues with homework completion. During the intervention, staff were provided with a personal digital device with software for prompting as to not disturb the class. However, during the intervention both staff and students used a regular log and were prompted by the same tape recording of a beeping noise. Both 3 and 10 minute intervals were tested in this study. Students were offered the incentive of a small reward if their self-recording closely matched those of the observers. The measures included the instances of on-task behavior as well as the number of completed homework assignments. Similar results show that when students are on task, they complete their work, and have a better chance of improving their academic standing especially when class participation and assignment completion are part of the grading process. The participants and staff were also given

surveys to assess the acceptance and perception of effectiveness of the intervention using digital device with software.

A study of self-monitoring using technology as part of the intervention was presented in Szwed's study (2013). A teaching tool known as a student response system was provided for students as a remote control device to submit their answers in a multiple choice format to teachers. Data was collected and stored by the device system for the teacher to access and evaluate student performance. The system consists of the student response remotes which look a lot like remotes for a television with a number pad to punch in answers. There is also a programmable receiver which is plugged into a computer to receive the student responses and convert into a readable format.

Three participants were elementary aged boys, two of which were diagnosed with ADHD, the third with ED. Prompted by a signal from the teacher, the participants responded with the controller to the question if they were following instructions and paying attention. Partial interval recording was used to measure number and percentage of occurrences in an ABAB design. Not only were all of the students able to significantly improve their on-task behavior with intervention, they reported enjoying using the technology as part of the intervention. It seemed that the student response system with technology was able to change the student's perception of mathematics to a pleasurable experience, because they used a remote control to provide their answers, which motivated their engagement in task completion.

In Amato-Zech, Hoff, and Dopeke's study (2006), the Motiv Aider vibrating device was used as a prompt in self-monitoring for three 5th graders. Of these, two were boys and one was a girl. During the baseline, their off-task behavior was observed

reaching 55% in the 5 minute intervals. During the intervention, the Motiv Aider device would vibrate and the students would indicate on a written form if they were paying attention or not. Results showed that the participating students increased their on- task behavior to a mean of more than 90% of the intervals. A brief survey of the instructors and students indicated that the intervention had high acceptability in the classroom. These results are promising in that the technology was useful to assist the students in increasing their on-task behavior. The vibrating prompt would cut-down on the distraction of audible or visual prompts, in order to allow students to keep their privacy during the intervention.

It is noted that majority of the studies reviewed lack of generalization to large populations, because the sample sizes were rather small with few studies including more than 4 participants. Gaining access to a large number of participants fitting in the desired criteria is difficult and would consume much time and resources to observe a larger population of classified students. Typically, there are only a handful of classified students per classroom to observe at any given time. In order to obtain a larger sample size, researchers would have to either observe multiple classes or access alternative settings which would bring about a whole new set of variables to take into consideration.

Despite students with ED were not the focus in their study; King, Radley, Jenson, Clark, and O'Neil (2014) performed research using the technology of video modeling combined with self-monitoring. In their study, four elementary students were referred by teachers for high instances of off-task behaviors in class. Three students were male and one female. Two had the diagnosis of ADHD while the other two had specific learning disabilities. Edited videos were made of approximately five minutes of the students

engaging in on-task behavior. Peer-model videos were also created and compiled into 14 different clips. Data was collected through 10 second interval during 15 minute observations in a math class. Students were trained using a peer video model. Along with self- monitoring to fill out an observation form, students watched four video segments of either their or peers' on task behavior for ten minutes each week during the intervention phase.

The results showed an increase to a mean of 85% on task behaviors comparing to 47% during the baseline. Teachers rated the intervention package using a Likert scale survey as highly favorable, highly acceptable, and beneficial to students. It demonstrated success by showing how students and teachers accepted technology to promote on- task behaviors.

A study examining the effects of using an iPad to increase on-task behaviors demonstrated similar results (Flower, 2014). Three elementary students in the 2nd, 3rd and 4th grade from a suburban residential school in Central Texas participated. All had been classified with ED and were noted for their off- task behaviors in class. The purpose was to examine how using engaging apps that provided both praise and opportunities to respond lowered off-task behaviors during independent practice in math and reading. An alternating treatment design was used when similar task were given to students first using pencil and paper worksheets and then to use iPad applications. The results showed that the students' on-task behaviors were increased when the iPads were provided in behavior management.

Blood, Johnson, Ridenour, Simmons, and Crouch's study utilized an iPod to combine video modeling and self-monitoring. A ten year old boy in the 5th grade,

classified with ED in a special education classroom in northern Illinois was the participant. A single subject design with video modeling followed by video modeling and self-monitoring was used.

The iPod was provided as a portable device to view videos of peer models displaying on task behaviors, and a second iPod as a timer for observation and recording data during the baseline and intervention. A timer app indicated the end of the interval with a chime for the observers heard through headphones as to not disturb the rest of the class. During the second phase where video modeling was combined with self-monitoring, the student used the iPod timer app as well. However, paper and pencil charts were still used to track on and off- task behaviors.

The results showed the first phase of video modeling alone only helped the student improve his on-task but inconsistently. The second phase when self-monitoring was introduced his on-task behaviors were increased consistently. In addition, his teacher indicated that the self-monitoring was far more effective than the video modeling, and the iPod was receptive as a technology tool in the classroom. As noted by Blood et. al. (2011), it is difficult to attribute success of this intervention solely to the self-monitoring alone, because the self-monitoring was overlapped with the video modeling. This study shows that technology such as the Apple iPod device is a very useful tool to engage a student in on-task behaviors to improve his class performance.

Summary

Research has showed that self-monitoring is a useful strategy for a high success rate of increasing student behavior changes (e.g. Amato-Zech, Hoff, & Dopeke, 2006; Axelrod, Zhe, Haugen, & Klein, 2009; Duckworth, Gendler, & Gross, 2014; Crum, 2004; Graham-Day & Gardener, III, Hsin, 2010; King, Radley, Jenson, Clark, & O'Neill, 2014; Szwed & Bouck, 2013). It seems that making students aware of their specific undesirable and desirable behaviors followed by observing and recording the absence/presence of those behaviors is a well- accepted means of intervention. All studies reviewed show a significantly high acceptance rate among teachers and students who involved in the intervention (e.g. Amato-Zech, Hoff, & Dopeke, 2006; Axelrod, Zhe, Haugen, & Klein, 2009; Duckworth, Gendler, & Gross, 2014; Crum, 2004; Graham-Day & Gardener, III, Hsin, 2010; King, Radley, Jenson, Clark, & O'Neill, 2014; Szwed & Bouck, 2013). However, of those studies, only a few utilized technology as a tool for the intervention. These included a vibrating device to announce the end of an interval, and repurposed wireless response remotes. Results showed that students liked to use a technology tool to record their behaviors, because using technology was considered a reward for their behavior changes.

In theory, technology that piques the interest of students and motivates them to stay on task, could be of great use in the special education classroom. Most students live a digital life and their academic life flounders as the two compete for attention and priority. By repurposing a video game mentality students can use electronic applications to track and reward themselves for on-task behaviors in the classroom. Perhaps,

technology combined with the proven effective intervention of self- monitoring could become a great asset.

Chapter 3

Method

Setting

School. The study was conducted in a suburban community in New Jersey. The school is considered as an alternative Title 1 high school according to the state code. During 2014 to 2015, a total of 47 students enrolled. All participating students were enrolled in a program developed to keep classified students at risk of being sent out of district, and to help return to their sending school, though many preferred to stay in the alternative setting until graduation.

Classroom. The study was conducted in the school's art room, the largest classroom in the building. The arrangement of the room is flexible for optimal project workspace and seating areas. The art room has several cabinets for supplies, two closets, a potters wheel and kiln, a sink, and a small toilet room. The room once was part of an early childhood center and has been refurbished to house high school classes. As far as technology, the room has a computer hooked up to a smart board which covers most of the blackboard. Students have access to iPads, laptops, and netbooks which can be signed out by the teacher.

The C period class ran on rotating block schedule. This schedule allows students to experience the class at different times of the school day. For example, Students have C period class at the first period on day 1, second period on day 3, third period on day 4, and an extended first period on day 6. Student behavior observations were conducted only when the C class was in session.

Participants

Students. A total of 4 students, 2 female and 2 male, classified as emotionally disturbed participated in the study. All 4 were Caucasian, and attending the art class together with other students. Of these 4, one is African American, and the rest are Caucasian with three males and three females. Table 1 presents the general information of the participants.

Table 1
General Information of Participating Students

Student	Age	Grade	Classification	Scores prior to intervention (%)
A	17	12	ED	84
B	17	11	ED	70
C	17	11	ED	94
D	18	12	ED	92

Student A is a 17 year old male in the 11th grade. He is classified with ED. Teachers report that he is distractible and inconsistent with his classroom performance. One day he will come into class ready to work and in an upbeat mood and the next his affect will be low and he will put his head on the desk for an entire period. He is capable to complete the assignment if he likes it. He tries to be friendly with all students which

can lead him to get involved in their personal business and social drama which distracts him from his academics, because he prioritizes socialization over academic tasks.

Student B is a 17 year old female in the 12th grade, classified with ED. Although her academic performance is at the level, she displays an entitled attitude such as being out of area without permission. She suffers from anxiety, moodiness, and withdrawal. If her mood is low or anxious, she will separate herself from the class or fall sleeping. She will often refuse to complete the assigned tasks if she feels she did an adequate job.

Student C is a16 year old female classified with SLD and social and emotional difficulties. She often presents emotional problems such as anxiety. Socialization distracts her from her academic tasks. Teachers note that she is frequently off-task and distracted by socializing with peers. She has trouble maintaining attention and focusing on tasks.

Teacher. An art teacher instructed the class the entire period of the study. This teacher has two years of experience in secondary art instruction and one year at an alternative school. He is responsible for creating stimulating art lessons to encompass the NJ Common Core Standards. His responsibilities also include filling out student point cards at the end of the period to those students who earn points for behaviors of respect, responsibility, and citizenship.

Materials

An iPad. An Apple iPad (second generation) and the HabitRPG application were used for the intervention that was considered as a rewarding game instead of a rote academic task. Students were guided to sign into the app and set up a list of habits or on-

task behaviors including asking relevant questions, maintaining eye contact with the teacher, staying in seating area, keeping hands to themselves, focusing on the assigned task, and keeping conversation on topic. At the end of each timed interval, the students used the app to record their appropriate behaviors presented during that time. Students simply tap on the box that describes the behavior or positive habit and the Habit RPG app awards points or coins for each instance of a desired behavior. Habit RPG provides a reward system similar to those in a video game. The coins or points earned can be used in exchange for new avatar decorations and other rewards in app perks.

One iPad was used as a timer for all students. The clock app was set to measure the intervals for the students to stop and log their behaviors, and choose the tone or chime to signal at the end of the interval.

Measurement Materials

Observation checklist. An observation checklist was developed using boxes to check with a plus or minus sign for each interval. The plus sign indicated when the desired on-task behavior was display while the minus was to note off-task behavior. The researcher and assistant scored students as an on or off task using partial interval recording for 30 second intervals for a 10 minute duration.

Assignment. The students were to work on the planned art assignments as designed by the teacher during the 55 minute period. The lessons included lecture, demonstration, and individual practice/studio time. The art curriculum allowed for less structured learning similar to the independent practice typically found in core academic

classes. The students are currently working on various painting projects in the room. They are either helping paint a table mural or on individual canvases.

Survey. At the end of the intervention both participating students and the staff completed a survey using a Likert scale of 1-5 regarding the acceptance of the intervention;1 representing strongly disagree, 2 for disagree, 3 for undecided, 4 for agree, and 5 for strongly agree. The questions inquired about ease of use with the application, how well it helped students stay on task, the acceptance of technology in the classroom, and if the technology would be useful in other classes or settings (see Figure 1.)

Self Monitoring with HabitRPG Survey

Directions: Read each statement below and put an **X** in the column that you feel most accurately indicates your feelings.

Statements	Strongly Agree 4	Agree 3	Disagree 2	Strongly Disagree 1
1. I found the application easy to use.				
2. The application helped me stay on task.				
3. I would rather use technology to help me stay on task.				
4. The technology/application was a distraction.				
5. I would use technology to help me stay on task in other classes or settings.				
6. I enjoyed using the application in class.				
7. I would like to share this technology with my friends or other students.				

Figure 1. Student survey for self-monitoring with HabitRPG.

Research Design

A single subject design with ABAB phases was used. During Phase A, baseline data was collected for one week by the researcher and teaching assistant using the observation checklist. Before the observations for phase B, students were taught the definitions of on-task behaviors and trained to use the HabitRPG application during their Intervention and Enrichment period. During Phase B, intervention, the HabitRPG application on an iPad was provided to each student to self-monitor their behaviors. The same observations were provided for 3 weeks. The iPads and HabitRPG application were removed and the same observation process was remained for a second Phase A for 1

week. During the second Phase B, students were given the iPads back to use HabitRPG app for their self-monitoring for 3 weeks.

Procedures

Instructional design. The baseline data was collected over the course of four class sessions for one week. The researcher observed and recorded the behaviors for a 10 minute session divided into 30 second intervals. A vibrating alarm was used to prompt the researcher to mark a coded on-task behavior on a sheet. Specific codes were used for each behavior. Table 2 presents the behavioral codes.

Table 2
On-Task Behavior Code Guide.

Behaviors	Code
Asking a relevant question	A
Maintain eye contact with teacher or task	B
Keep conversation on topic	C
Work on current project	D
Stay in assigned area	E
Keep hands to yourself	F

During the intervention, students were taught how to use the iPad HabitRPG application. Students were instructed on how to sign into the application, set up habits, and delete or ignore all other distracting portions of the app such as dailies and to-do lists. The students were instructed to only use the habit portion of the HabitRPG app but not the social media aspects. Any additional time left in the period was given to the students to explore the app and personalize the avatar. Students were asked to use the app in art class to record when they exhibited the desired on-task behaviors of asking relevant questions, keeping eye contact with the teacher, staying in area, and focusing on the assigned project. The students received an audible prompt every 5 minutes during the class to record their behaviors. The teacher instructed the students to use the intervention app for the entire class period for 5 weeks. The same measuring technique was used as in the baseline.

After 5 weeks, the iPad was taken away for one week, then given back to students for 5 weeks, same observations were continued during both sessions.

At the end of the study, a survey was given to each student. The teacher was also given a separate survey. The survey was used to tally a numerical score in how well the intervention was received.

Measurement Procedures

Observations. During observations, the researcher watched the students from the back of the classroom. After each 30 second interval, a vibrating alert from a timer application on an iPhone prompted a written response on the behavior checklist. If at any

point during the interval the defined on-task was observed a plus sign was marked . If on-task behaviors were not observed a minus sign was marked in the box for that interval.

Survey. At the end of the study, both students and staff participating in the study were required to complete the survey. The researcher read each question, and directed each student to mark on the survey item with 1 to 5 to represent their acceptance of the intervention.

Academic grades. The number of completed assignments were recorded as well as the grades. The teacher stores and accesses this information using the district's Progress Book software program.

Data Analysis

The observation data were calculated in percentages and presented in a visual graph to compare the difference in difference phases. Specific behaviors were also compared in a graph to see which behaviors occurred more frequently. Student assignment scores were graded in percentages. Means and standard deviations were displayed in tables as well as the survey scores that were calculated in percentages.

Chapter 4

Results

On-Task Behaviors

On-task behaviors were identified into 3 specific components including, asking a relevant question, maintaining eye contact with the teacher or task, keeping conversation on topic, and working on the current project, and were observed and recorded using the checklist demonstrated in Figure 1. Means of each behavior occurrences were calculated as well as standard deviations that are presented in tables 3, 4, 5, and 6. Figures 2-13 represent the mean scores in graphical format.

Table 3
Asking a Relevant Question

	Baseline 1		Intervention 1		Baseline 2		Intervention 2	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**
Student A	0.5	1	1	2	0	0	0	0
Student B	0	0	1	1.14	0	0	0	0
Student C	0.5	0.577	0.5	0.71	0	0	0.25	0.5

Table 4
Maintaining Eye Contact with Teacher Or Task

	Baseline 1		Intervention 1		Baseline 2		Intervention 2	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**
Student A	1	2	4.25	8.5	0	0	0	0
Student B	2	4.47	10	14.14	8.5	12.02	0	0
Student C	20	0	20	0	8.5	10.61	17	4.76

Table 5
Keeping Conversation On Topic

	Baseline 1		Intervention 1		Baseline 2		Intervention 2	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**
Student A	0.25	0.5	1.25	2.5	0	0	0	0
Student B	0.4	0.89	1	1.41	0.5	0.71	0	0
Student C	0.25	0.5	1	0	0.5	0.71	0.33	0.578

Table 6
Working On Current Project

	Baseline 1		Intervention 1		Baseline 2		Intervention 2	
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**
Student A	0.25	0.5	5	10	0	0	0	0
Student B	3	6.71	10	14.14	8.5	12.02	0	0
Student C	20	0	20	0	8	11.31	19.5	1

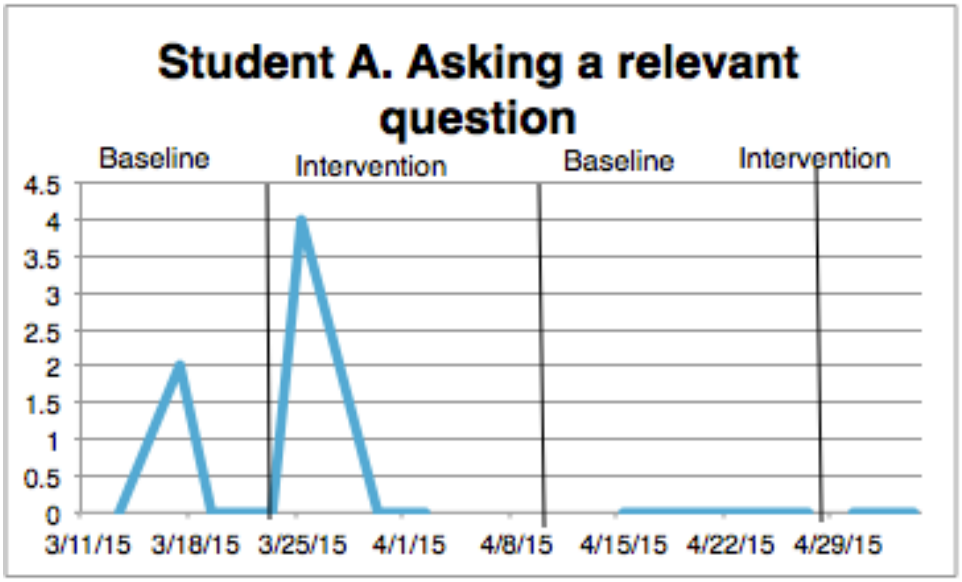

Figure 2. Student A. Asking a relevant question

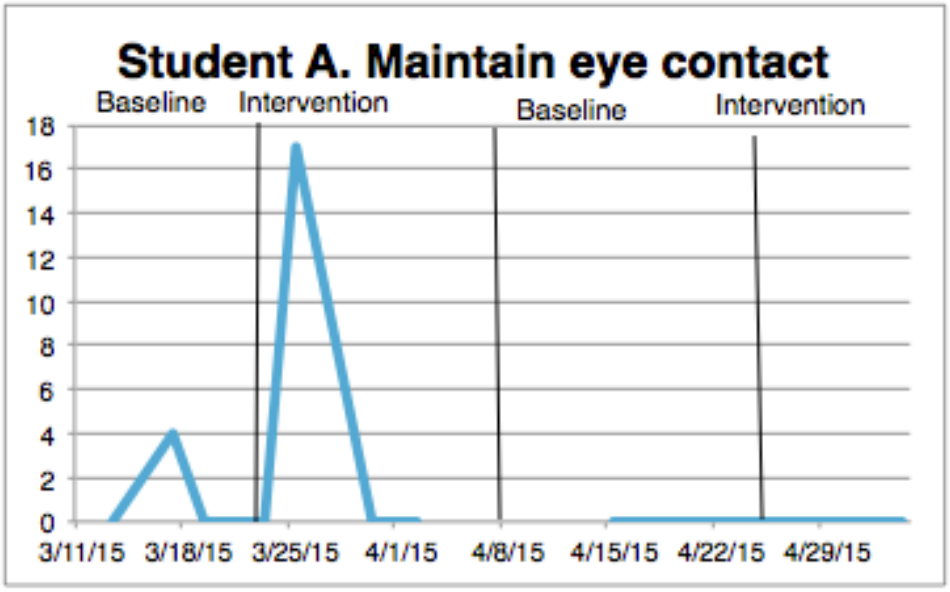

Figure 3. Student A. Maintaining eye contact

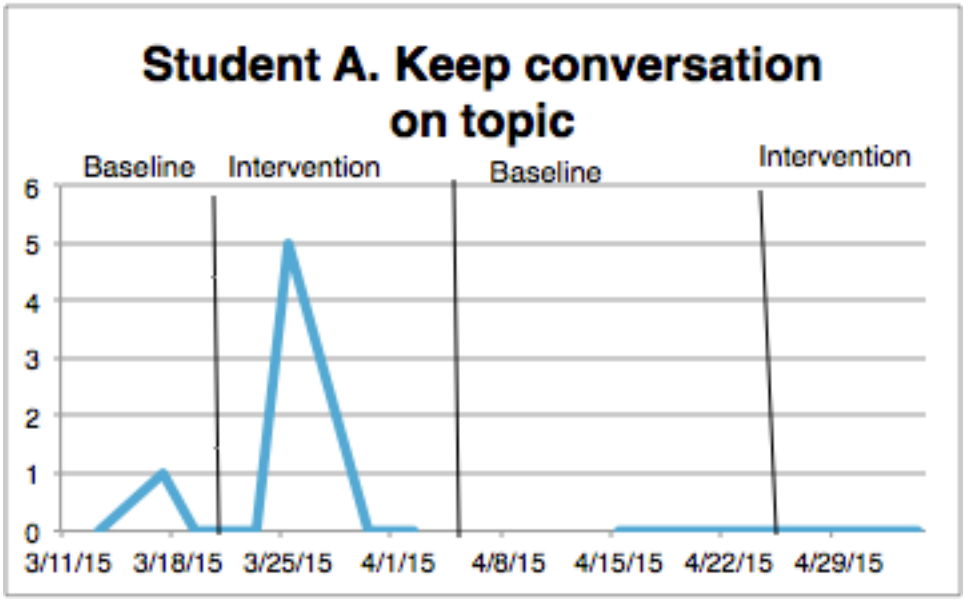

Figure 4. Student A. Keeping conversation on topic

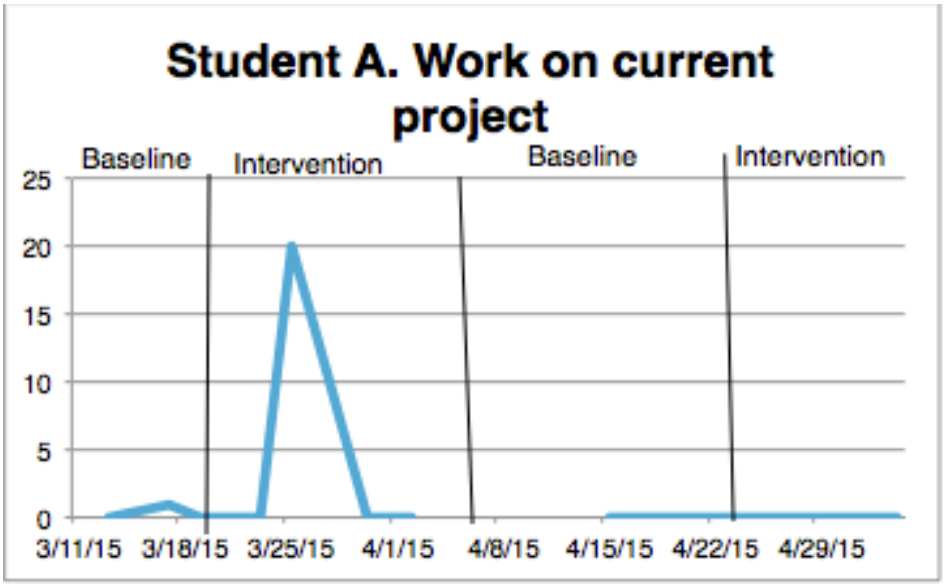

Figure 5. Student A. Working on current project

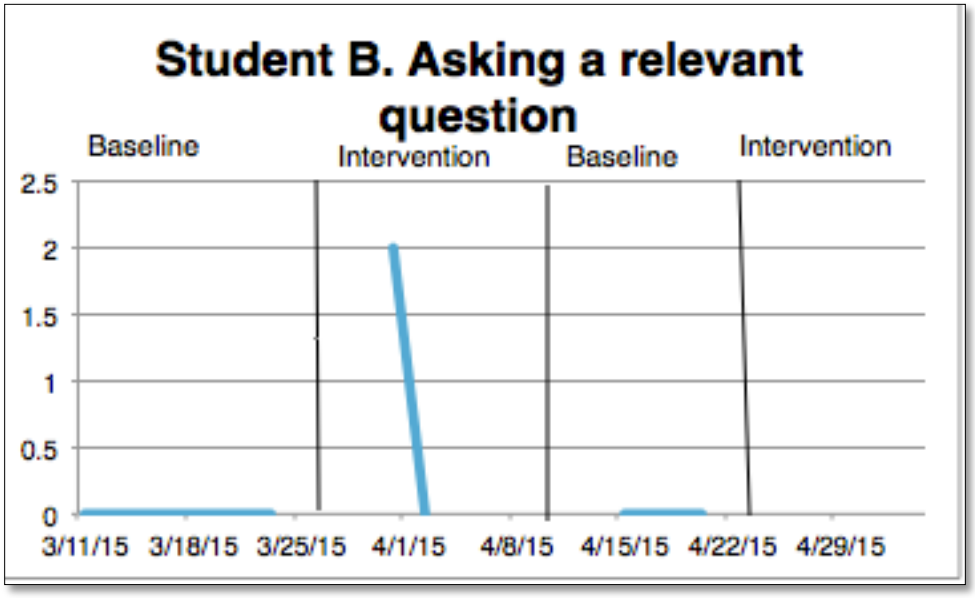

Figure 6. Student B. Asking a relevant question

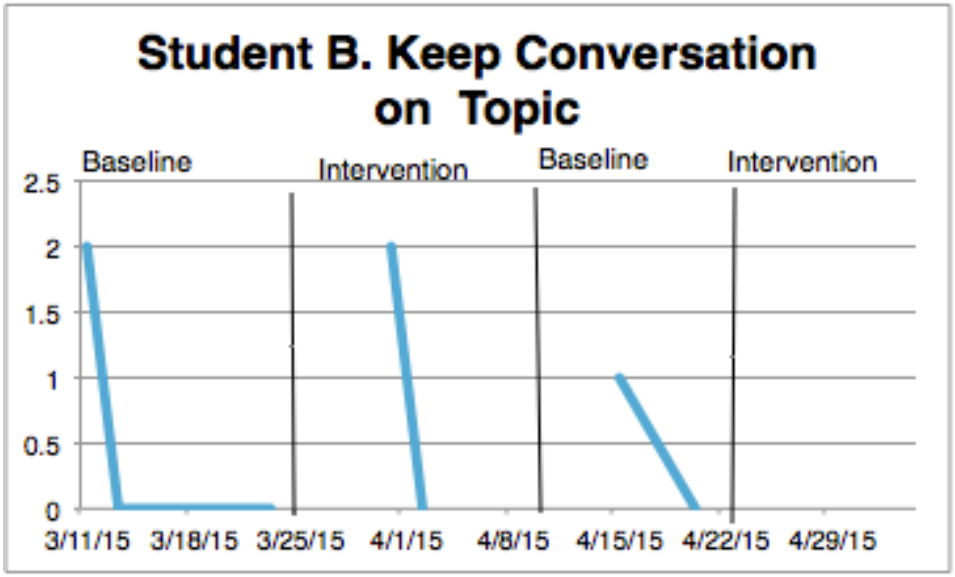

Figure 7. Student B. Keeping conversation on topic

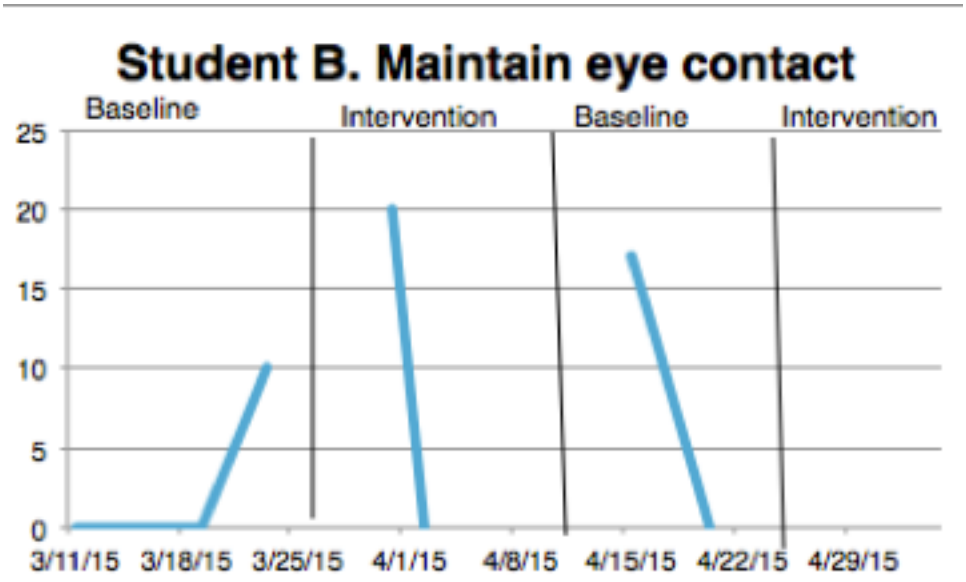

Figure 8. Student B. Maintaining eye contact

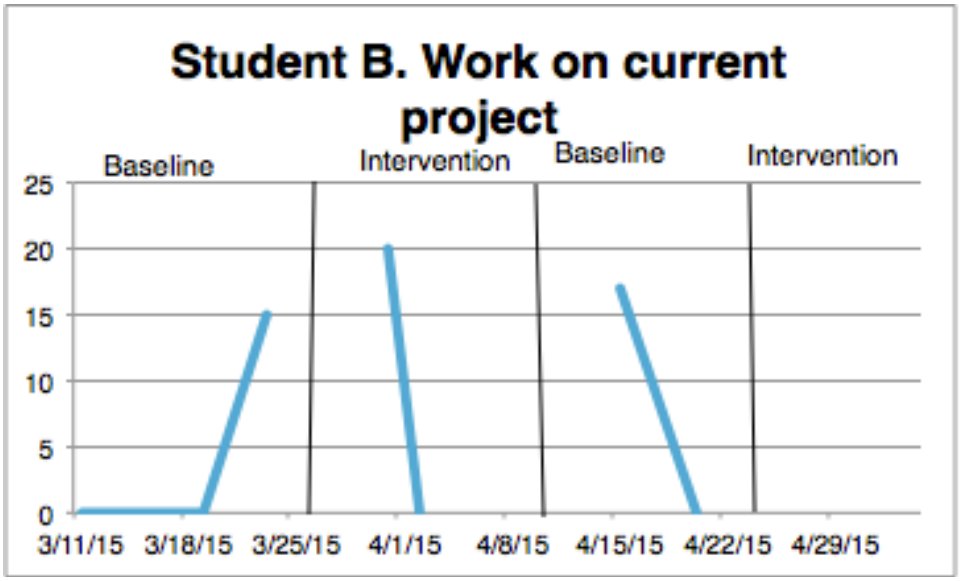

Figure 9. Student B. Working on current project

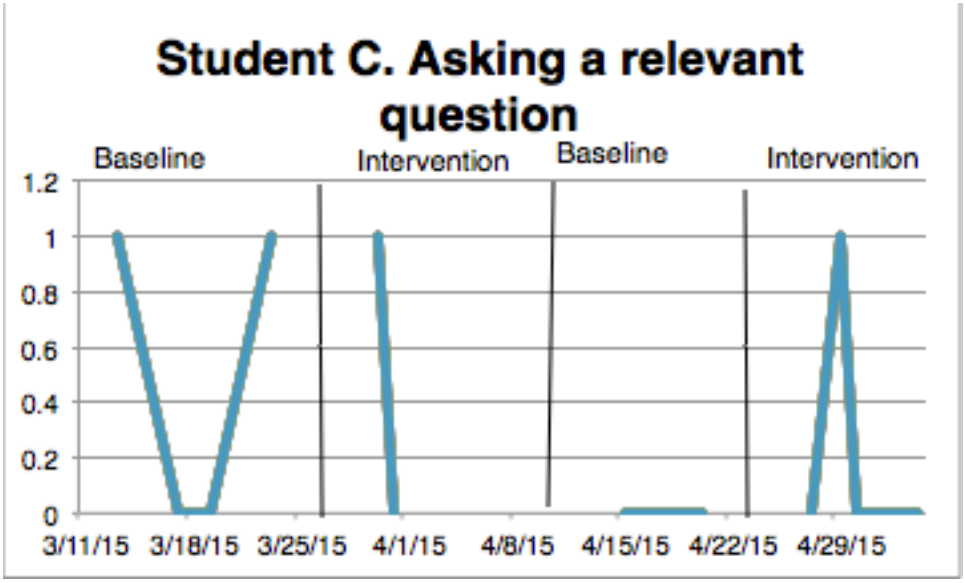

Figure 10. Student C. Asking a relevant question

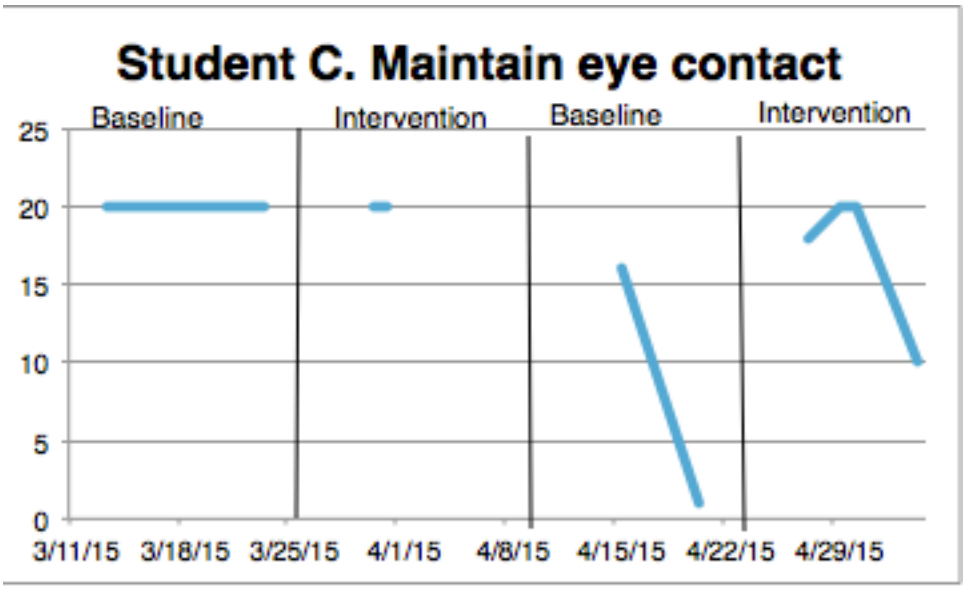

Figure 11. Student C. Maintaining eye contact

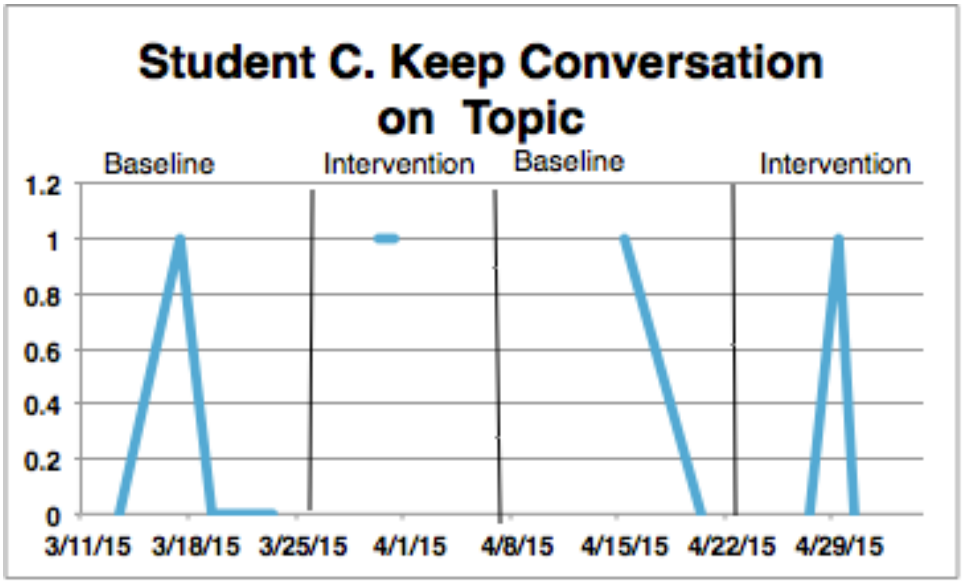

Figure 12. Student C. Keeping conversation on topic

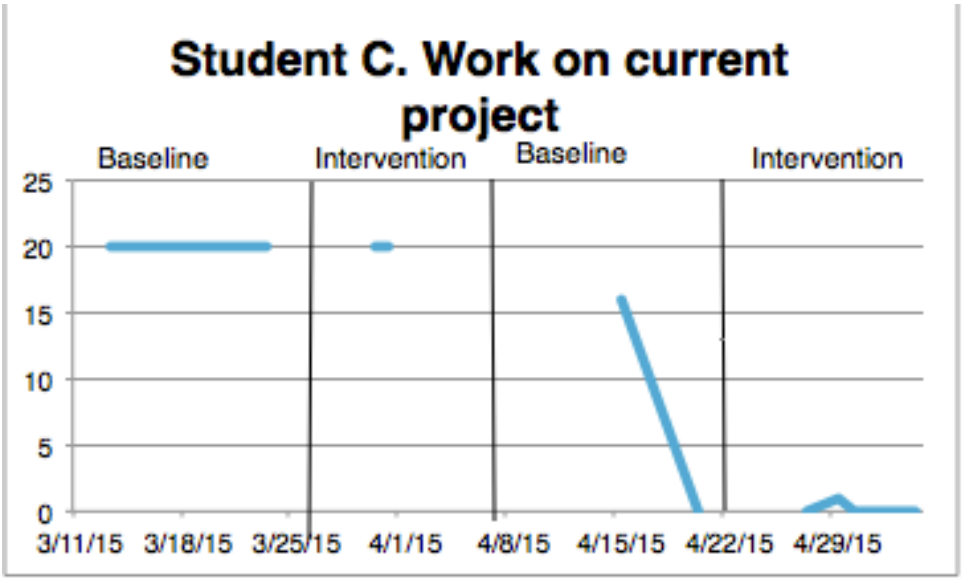

Figure 13. Student C. Working on current project

Asking a relevant question. Student A 's mean score was 0.5 during the initial baseline which increased to 5 in the first intervention when an iPad was provided for self-monitoring. The mean was reduced to 0 in the second baseline and 0 again during the second intervention. Student B's mean score was 0 for the baseline with an increase of 1 in the first intervention, 0 again for the second baseline and 0 for the second intervention. Student C's mean score was 0.5 for the initial baseline, 0.5 gain in the first intervention, then n the second baseline, and 0.25 for the second intervention.

Maintaining eye contact with teacher or task. Student A's mean score was 1 for the behavioral variable of maintaining eye contact with the teacher or task. He increased to an mean score of 4.25 in the first intervention with the iPad for self-monitoring. During the second baseline, Student A scored 0. He also scored a 0 for the second intervention phase. Student B's mean score was 2 for the baseline, then increased

to10 in the first intervention. Her second baseline 's mean score dropped to 8.5, and in the final intervention she scored ~~a~~ 0. Student C scored 20 for the first baseline and 20 again for the first intervention, then dropped to 8.5 in the second baseline. The final intervention Student C's mean score was 17.

Keeping conversation on topic. *S*tudent A's mean score was 0.25 during the baseline. For the first intervention, his scores increased to 1.25. During the second baseline and intervention his score was 0. Student B scored 0.4 for the baseline, increased to 1 for the first intervention. She scored 0.5 for the second baseline and 0 for the final intervention. Student C's score was 0.25 for the baseline, and increased to 1 in the intervention. The second baseline score was 0.5, but only 0.33 in the final intervention.

Working on current project. Student A's baseline score was 0.25, increased to 5 during the first intervention, then dropped to ~~a~~ 0 for the second baseline and 0 again for the second intervention. Student B scored 3 for the baseline. For the first intervention her score increased to 10. For the second baseline her score dropped to 8.5. The last intervention she scored 0. Student C's score was 20 for the first baseline and 20 for the first intervention. She dropped to 8 for the second baseline, and increased again to 19.5 during the last intervention.

Student Performance

Each Student was graded on daily participation and received grades from their teacher. Their scores were converted into percentages. Table 7 displays their scores.

Table 7
Student scores for participation in Art.

	Baseline 1	Intervention 1	Baseline 2	Intervention 2
Student A	56	70	60	60
Student B	76	55	80	40
Student C	100	70	66.67	93.33

Student A 's performance in daily art participation showed an increase of 14% during the first intervention then ~~a~~ decreased to 10% in the second baseline, while no change was presented during the second intervention when the iPad was resumed.

Student B showed a decrease of 21% points with her participation grade the intervention with the iPad and self-monitoring and an increase of 25 % points for the second baseline when the iPad was removed. She dropped again to 40% for the last intervention.

Student C dropped 30% points during the first intervention using self-monitoring with the iPad. She dropped again to 66.67% when the iPad was removed during the

second baseline. Her average grade increased by 26.66 % in the last intervention when the iPad was re-introduced.

Survey Results

Both the teacher and students completed a survey at the end of the study. Answers were tallied and calculated in means. The statements were rated on a scale of 1 through 5, representing 1 "strong disagreement" to 5 "strong agreement" with 4, "agreement" and 3 " neither agreement or disagreement". Table 7 and 8 present the mean score and standard deviation of each statement respectively.

Table 8
Student Satisfaction Scores

Statements	Mean	SD
I found the application easy to use.	3.8	0.45
The application helped me stay on task.	3.2	1.30
I would rather use technology to help me stay on task than a paper chart.	3.4	1.34
I found the application distracting from my work.	2	1.22
I would use this technology to help me in other classes or settings like home.	3	1

Table 9
Teacher Satisfaction Scores

Statements	Average Score
I found the intervention to be successful in my class.	5
The application helped my students stay on task.	4
The technology/application was a distraction.	2
I would rather use technology to help student's stay on task than a paper chart.	5
My students seemed to enjoy using the application in class.	4
I would like to share this technology with my colleagues or other students.	4

Five students participated in the survey. The scores range from 1-5. Scores above 3 are representing agreement with the statement while those below disagreement. The first statement of students finding the application easy to use was the most agreed upon statement not only in the sense of highest scoring statement but having the lowest deviation.

The next statement with strong concordance was, "I would use this technology to help me in other classes or settings like home." This statement received a solid 3 with a standard deviation of 1 which means for the most part students were neutral. Next was the statement of "I found the application distracting from my work." Only one student

found the intervention to be a distraction. The other four either strongly disagreed or disagreed with that statement.

Only two students felt the application helped them stay on task, while two disagreed and one neither agreed or disagreed. Three of the four students would rather use technology like the iPad and HabitRPG application over paper charts to keep on task and two disagreed.

As there was only one teacher to survey the results are straight forward. He strongly agreed that the intervention was successful and preferred to use technology to help students stay on task. He did not feel that the intervention was a distraction to his students. The teacher also agreed that the students seemed to enjoy using the application and that the intervention helped them stay on task. He was open to sharing this technology with other colleges and other students. Over all the teacher survey showed favorable responses towards the intervention using iPads to increase on-task behavior in his classroom.

Chapter 5

Discussion

Findings

The purpose of this study is to examine if students with ED increase on- task behaviors in class through the use of an iPad for self- monitoring, as well as their academic performance.

The results showed that all students increased their on- task behaviors, such as asking a relevant question, maintaining eye contact with the teacher or task, keeping the conversation on topic, and working on the current project, though the increase was slight. For example, Student A and Student B improved their behavior of asking a relevant question during the first intervention and student C needed a longer time to improve until the second intervention. All participants had an increase on maintaining eye contact with the teacher, and two students increased behaviors of keeping conversation topic and working on the current project when iPad was introduced except Student C. Student C maintained a score of 20 for the baseline and first intervention for working on the current project, while student A and Student B's on-task behaviors were not continued to increase during the second intervention when iPad was resumed.

The results showed that two student's academic grades in the art class dropped. Only Student A showed an increase during the first intervention. Student C improved her grades during the second intervention. Because of the various scores of individual students, it is inconclusive if using iPads for self -monitoring has any effect on student's academic achievement. It seems that the improved on-task behavior should be related to

the gain of student's learning outcomes, however, reviewing research in self-monitoring, limited data were found to support this assumption. Further research should focus on this area to provide evidence-based practice in behavior management and its impact on academic performance.

All students were surveyed after the intervention to find their opinions about using an iPad to self-monitor their behaviors in class. The scores above 3 represented an agreement. A score of 5 represented strongly agreeing, 4 agreeing, 3 neutral , 2 disagree, and 1 strongly disagree. The average scores were moderate except for the fourth statement which averaged to 2 out of 5. The majority of the students found the application easy to use. They indicated that it helped them stay on task. The statement of using technology to help stay on task over using a paper chart was 3.4 out of 5, higher in agreement. The last statement of using this technology in other settings scored 3, indicating an agreement to continue to apply iPad. The results of the teacher survey were strongly in favor of the intervention. The teacher indicated the intervention as a success in class and strongly agreed that the intervention did help the students stay on task. The teacher also strongly agreed on the use of technology to help students track their behavior rather than paper charts. He was also agreeable to sharing this technology with other students and teachers, because he found that his students enjoyed using the iPad application.

Limitations

The results may have been very different if more time was spent allowing the students to explore the iPad application and use it for a longer span of time during the intervention. The students may not have had enough time to acclimate themselves to using self-monitoring for any effect. As mentioned in Duckworth, et. al 's study (2014), students need to become aware of how often they are engaging in off task behaviors in order to improve. This self-awareness needs to be taught before implementing self-monitoring process, so that they may be aware of their behavior problems, and their intention to improve.

Another limitation of the study was the classroom setting. The chosen class was an art elective class which had a less structured environment than required class such as history or science. There are few chances to display on -task behaviors such as asking relevant questions or keeping conversation on topic as there is less facilitated discussion and lecture time. The presentation of concepts and materials varies greatly as the environment was more conducive of self- exploration and expression. Had the class been more geared towards lecture with more built in opportunities for discussion, the results would have been different. Another factor that inhibited the study was the fact that the students were working on a painting unit. Student C displayed discomfort in touching the iPad as she did not want to get paint on the device. She asked another student to track her behavior. This lack of interaction with the technology defeated the integral purpose of self- monitoring which is supposed to consist of, "self- observation and self- recording" (Amato-Zech 2006, p. 211). Without engaging in the process of self-monitoring, student C could not reap all the benefits.

Gauging the effect of self-monitoring with an iPad on the students' academic grades was problematic. It could not be determined if the intervention had any impact at all. It would have been interesting to see if the students showed improvement in the quality of their final art projects as the result of using self-monitoring with the iPads.

Another variable to take into consideration is the mere presence of an observer in the classroom that may have an impact on student behavior. The students were very excited to see an observer in the room and tried to change their behavior to please the researcher. The researcher also had a long standing relationship with some of the students in the class. As stated by Kelly and Shogren (2014) , "students often have preferred classes and/or teachers that can also impact their level of on-and off-task behaviors " (p.38). The discrepancies and deviations in the survey answers could be attributed to this factor as well.

The students were also observed during a very high stress testing period. The school wide participation in the state test impacted student performance. It would have been better for the students to first be exposed to the intervention during the time of regular school climate and scheduling. Timing was also working against the intervention. Specifically students A and B seemed to fizzle out with work ethic as the time passed. Student A even stated the day before spring break that he had no intentions of participating and doing his school work that day. The best time to observe the students would be during the second marking period when they have fallen into a routine and there are not as many scheduled distractions.

The small sample size of 3 participants in the study is a limitation too. Generalizing the findings to a larger scale would not be prudent. Until more students

become involved over a longer period of time, the data collected should only strictly be used to draw conclusions about the specific population presented in this study.

Implications and Recommendations

Although the study has its limitations and the data does present that the iPads and HabitRPG application helped students improve their on-task behaviors. Prior studies have warranted stronger results and thus demand that research continue on the use of technology to help students improve on-task behaviors in the classroom (Hoff, & Dopeke, 2006; Axelrod, Zhe, Haugen, & Klein, 2009; Blood, Johnson, Ridenour, Simmons, & Crouch,.2011; Flower, 2013; King, Radley, Jenson, Clark, & O'Neill, 2014; Szwed & Bouck, 2013; Kelly & Shogren, 2014). It seems that students liked the use of technology in the classroom as part of behavior management as responding to the survey. More research should be done in other types of classrooms to evaluate the iPad on increasing on-task behaviors. It would be interesting to gain access to a private account to allow students to utilize the social aspects of the application and encourage each other to form new on-task habits.

Conclusion

This investigation was successful in that it gained student interest and showed some results in improving student's on-task behaviors. Further research is needed to validate the findings and extend the use of technology to help high school students increase their on-task behaviors. Perhaps with more time and practice, self-monitoring

with iPads could become a success for helping students diagnosed with emotional disorders achieve higher rates of on-task behaviors in school.

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Appendix

Materials

Student Survey

Directions: Read each statement below and put an **X** in the column that you feel most accurately indicates your feelings.

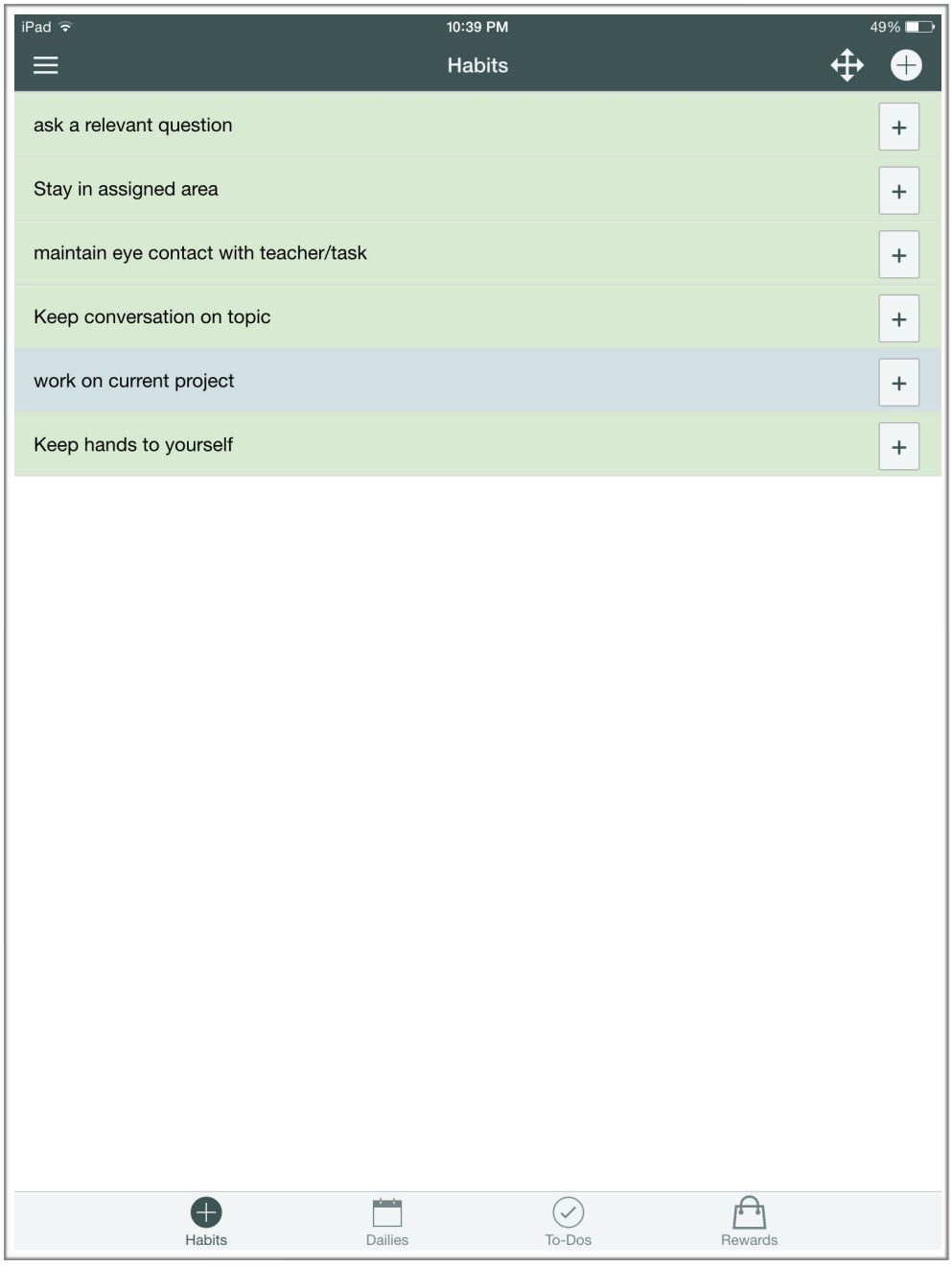
Statements	Strongly Agree 4	Agree 3	Disagree 2	Strongly Disagree 1
1. I found the application easy to use.				
2. The application helped me stay on task.				
3. I would rather use technology to help me stay on task.				
4. The technology/application was a distraction.				
5. I would use technology to help me stay on task in other classes or settings.				
6. I enjoyed using the application in class.				
7. I would like to share this technology with my friends or other students.				

Staff Survey

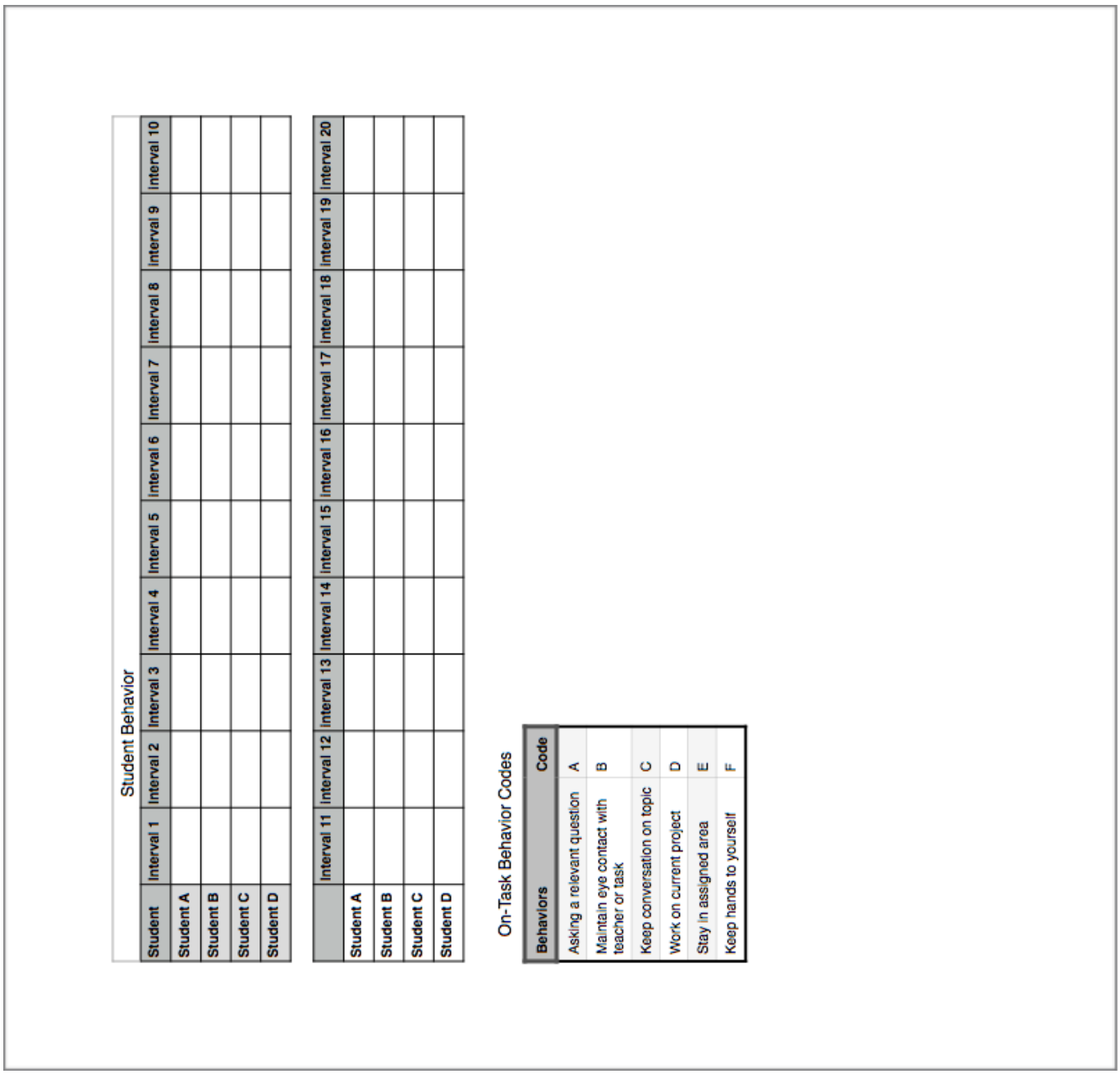
Directions: Read each statement below and put an **X** in the column that you feel most accurately indicates your feelings.

1. Did you find the intervention successful in your class?				
Strongly Disagree	Disagree	Undecided (neither agree or disagree)	Agree	Strongly Agree
2. Did you feel the application helped students stay on task?				
Strongly Disagree	Disagree	Undecided (neither agree or disagree)	Agree	Strongly Agree
3. Would you rather use technology to help your students stay on task than a paper chart?				
Strongly Disagree	Disagree	Undecided (neither agree or disagree)	Agree	Strongly Agree
4. Did you find this technology to be distracting?				
Strongly Disagree	Disagree	Undecided (neither agree or disagree)	Agree	Strongly Agree
5. Would you use this technology to help in other classes?				
Strongly Disagree	Disagree	Undecided (neither agree or disagree)	Agree	Strongly Agree

HabitRPG Screenshot



Behavior Observation Chart



Student Behavior

Student	Interval 1	Interval 2	Interval 3	Interval 4	Interval 5	Interval 6	Interval 7	Interval 8	Interval 9	Interval 10
Student A										
Student B										
Student C										
Student D										

	Interval 11	Interval 12	Interval 13	Interval 14	Interval 15	Interval 16	Interval 17	Interval 18	Interval 19	Interval 20
Student A										
Student B										
Student C										
Student D										

On-Task Behavior Codes

Behaviors	Code
Asking a relevant question	A
Maintain eye contact with teacher or task	B
Keep conversation on topic	C
Work on current project	D
Stay in assigned area	E
Keep hands to yourself	F