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Preschool Whole Group Circle Time:

Does More Comfortable Seating Give Rise to Preschooler Engagement?

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SPED 696 - Capstone in Early Childhood Special Education

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Abstract

Flexible and alternative seating in the classroom has been a topic of research and implementation in the classroom in recent years. At this time, much of the research discovered looked at inflatable cushions, therapy balls, or even low tables using pillows as seats. It has been observed in practice by this researcher that many times what is sometimes labeled as flexible seating is just something that is "cute" and not a regular chair with a back and legs or flexible seating as noted in research findings such as a therapy ball. Thus far, it has been difficult to determine the place of a foam cushion within the research, let alone if different thicknesses will affect the behavior of preschool children. The purpose of this project was to address the use of a foam cushion to be utilized in the classroom environment by preschool aged children (3-5 years) of thicknesses of one inch, two inches, and three inches versus the concrete classroom floor which is covered by industrial carpet and a one-half inch alphabet carpet. Using an Impact on Student Learning approach with a single subject design, data was collected regarding on and off task behaviors during whole group learning time both while using the cushions and not using the cushions for both general education and special needs students in the inclusive classroom. It was the hope of this researcher that thicker cushions will lead to higher on-task behavior on the part of preschool children, however findings did not show a difference at this time. The foam cushions were covered in the same manner in fabric and were of the same brand with thickness being the only difference in the foam cushion itself. These cushions were made with the idea of being quiet, comfortable, and non-distracting for students while giving more comfort when expected to sit on the floor.

Key Words: ECSE, intervention, behavior management, flexible seating.

"If there is freedom in simple decisions, such as choosing a desk or a seat, a healthy community will potentially be created with less stress" (Alzahrani, 2021). While most preschoolers in a local setting are given a seating chart when at the carpet for group learning or circle time, choice plays a role in whether they do what is asked of them at a given time. Seating charts or assigned seating are recommended practice to be an effective teacher according to Wong & Wong which allows for student engagement, avoiding behavior problems by separating "problem students" and allow a visual line for the teacher with all students (2009).

Observationally, this researcher has noted when seated at the carpet for whole group instruction, children are asked to sit "crisscross applesauce" on a rug which covers a thin carpet overlaying a concrete floor. While some children are able to sit for extended periods in this method, many are not. Wiggling, touching other children, laying down, and other methods of moving or gaining sensory input are observed when sitting for more than a few minutes. When students are off task, they are disturbing the learning of other students by distraction or causing other more impressionable students to mimic this negative behavior which many times causes the teacher to intervene and thus lose the flow of the lesson (Tominey & McClelland, 2013). At the preschool age level, students are learning how to be productive and appropriately participating members of a classroom community.

Observations by this researcher have been shown in another study by Yildiz in 2015 that students with special needs, such as developmental delay, sometimes have even more trouble than most with the requirements of listening to a teacher for increasingly long periods of time without bothering other students. When students are uncomfortable, such as sitting on concrete with minimal padding for increasingly long periods, this can cause even more negative behavior in order to alleviate the discomfort, hence the idea to try alternative or flexible seating.

Literature Review

Flexible Seating

Flexible seating in the classroom has been a topic of discussion and research in the past few years with studies focusing on early childhood (Hardin, 2017), student engagement (Burgeson, 2017), and generally in the classroom (Wright, 2020) to name a few. Flexible seating can be considered an adaptation or environmental support for students with special needs (Martin, 2019). In general education settings, flexible seating can look like such things as beanbags, tractor seats on wheels, or even a yoga ball, among many other options. Flexible seating covers options for movement, changes in height, and comfort. Jimenez (2017) points out that not much has changed in all the years of teaching students, they are still required to sit for much of the day. Jimenez also points out that research has been done showing the many ill effects of too much sitting which include increased risk for disease, obesity, and lack of muscle tone, all of which can be addressed in part with flexible seating (2017).

In the past, researchers have studied flexible seating in the form of therapy balls, inflatable cushions, standing desks, and foot fidgets among others (Wright, 2020). Research has identified benefits of the use of flexible seating which have included decreasing behavior referrals, increasing attention/engagement, and academic performance (Wright, 2020). Identified challenges with flexible seating have also been noted with distraction and lack of structure, possibly leading to student anxiety and cost for teachers and/or school districts not to mention difficulty with storage and arguments over seating options (Wright, 2020).

Behavior

The benefits of flexible seating with regard to behavior have been noted in studies as far back as Knight and Noyes in 1999 and more recently in Schrage 2018. Knight and Noyes reported that children are asked to sit for a large portion of their day. As such, the furniture used should be comfortable and functional. They noted that at the time, furniture was designed to support attending to the teacher, staying in one place, and writing among others, however, when students are not allowed movement, muscle fatigue and pain can result from the postural immobilization (Knight & Noyes, 1999). Research with nine and ten-year-old subjects demonstrated that when using furniture that is specifically designed to support lumbar and be the correct size for the child showed that they still adopted non-standard ways to sit which led the researchers to hypothesize that there is not a one-size-fits-all type of chair to make all students sit in a defined manner (Knight & Noyes, 1999). Results were inconclusive about the specific chair being ergonomically fit to certain sizes of students reducing out of seat or off task behavior as there was little difference between the specific chair used and traditional seating. The authors in this case noted that teachers should "Simply recognize that children are individuals with personal preferences and to make choices available to them" (Knight & Noyes, 1999). While the previous was an older article, this researcher notes that though not formally recognized, flexible seating was technically being advised to allow students to be more comfortable and thus, hopefully more on task.

In separate survey research by Heather Schrage in 2018, special education teachers indicated their perception on how flexible seating affected behavior in their students. A survey asked special education teachers who used flexible seating ten questions in yes/no or multiplechoice format on how flexible seating impacted behavior in their classroom (Schrage, 2018). The teachers in the study indicated that there was improved attention, choice of seat, and student accommodation with the flexible seating options of yoga balls, carpets, wobble seats, and rocker chairs among others (Schrage, 2018). Schrage's research noted that "students with disabilities who sat in the same spot for long periods of time in the school setting were more likely to show negative behaviors" (2018).

Self-Regulation

According to Martin in 2019, environmental supports and adaptations are a common strategy for increasing self-regulation. Flexible or alternative seating, weighted vests/blankets/backpacks, movement breaks, and yoga fall into the category of an environmental support or adaptation because they are used within the environment and are normally added to the students or a choice for the students to use (Martin, 2019). According to Martin in 2019, inflated cushions and inflated therapy balls have research supporting their use as a "positive intervention strategy to increase self-regulation and attention." Martin's research found studies involving early childhood participants using therapy balls and therapy cushions, among other options (2019). Most research that was noted in this area showed that teachers noted not all students needed the alternative seating option but for some students it was very helpful to their ability to demonstrate on-task and self-regulation skills (Martin, 2019). Therapy balls were used most with students, and it was noted that they spent much more time on task with the ball than without, however, the replacement cost should a ball be popped was noted as a limitation to their use in the classroom (Martin, 2019).

Engagement

In a study done in 2017 by Seifert and Metz, the use of inflated seat cushions for engagement of preschoolers during circle time was specifically studied. This study showed positive results regarding the effectiveness of the inflated rubber cushions on engagement. Another study done by Burgeson in 2017 looked specifically at the influence of flexible seating on engagement. In Burgeson's study, third grade students rated their own engagement levels across the use of 7 flexible seating options. The results surprisingly demonstrated that a traditional desk and chair was highly engaging for a little more than half the class, though there were three other options including differing table heights and wiggle seats that were rated as more engaging (Burgeson, 2017). Ultimately, the author pointed out that students differ in their preferences and needs, thus, flexible seating is not a one-size fits all and different types of seats affect the engagement level of each student differently (Burgeson, 2017).

Early Childhood Research

Specific research looking at early childhood has been done by a few researchers. One of which is Hardin who, in 2017, allowed use of seat choice in her early childhood classroom in the form of scoop rockers, sit spots, stools, floor pillows, and yoga balls. Hardin noted that students were able to attend for longer, but she also noted that clear and specific boundaries/expectations had to be established for students to gain the most benefit and least disruption to the classroom (2017). The need for rules, procedures, and expectations to be clear when implementing flexible seating in the classroom has also been pointed out by Jimenez in 2016.

Cushions as Alternative or Flexible Seating

As the project progressed, this researcher found little in the literature to address the use of foam-type cushions as flexible seating which will be the focus of this project. Previous research has mentioned cushions but on further reading, the cushions were actually a type of rubber seat (AKA a therapy cushion or Disc-o-Sit) that can be inflated to different levels and have a smooth side and a bumpy side giving sensory input to their users (Wright, 2020). Cushions are noted to be easily moved, usable on multiple surfaces such as chairs or floors, and more easily stored (Wright, 2020).

Purpose of Project

This capstone project looked at alternative seating in the form of foam cushions being allowed at whole group circle time using different thicknesses with different children. Data was collected regarding the engagement of the students both before and during using the cushions, with the option of choice to use a cushion or not depending upon length of time allowed for the collection of data. For the purpose of this capstone project, foam was chosen due to its light weight, being noiseless, and storage options within the classroom. Foam was also chosen due to previous attempts with a particular student to use inflated rubber cushions, BackJack chairs, and regular chairs at circle time with the result at that time being more distraction than engagement on the part of said student. The study considered that anything new, i.e., introduction of cushions, has a novelty period of adjustment. It was the hope of this researcher that the results of this study demonstrated that more comfort (thicker foam) would lead to higher engagement (ontask) levels of the preschoolers involved, both those with identified special needs and those without.

Methods

Group Composition

The Monday-Wednesday-Friday class consisted of 7 girls and 10 boys, 6 were on an IEP -6 students were assigned 3" cushions, 6 were assigned 2" cushions, and 5 were assigned 1" cushions. The Tuesday-Thursday class consisted of 10 girls and 5 boys, 2 were on an IEP -6 students were assigned 3" cushions, 5 students were assigned 2" cushions, and 4 were assigned 1" cushions. Socio-economic status and race/ethnicity/culture were not accounted for.

Materials

Foam cushions of different thicknesses were created by the researcher using one-, two-, and three-inch foam covered with a machine stitched fabric cover. The cushions were made to the dimensions of 11" x 11" due to the sizes of foam being available to order as well as the price to make enough cushions to allow for each student in the classroom to have a cushion during cushion use weeks. Six cushions of each thickness were created.

Data Collection

On/off-task behavior was recorded at 2-minute intervals due to the short average wholegroup times throughout the day for 4 students in each of two classrooms. The timer used was the researcher's smart watch timer function which was able to be quickly set/reset each time it went off. This timer was very unobtrusive as it was set to vibrate as to not be distracting to the students or teacher. The two-minute interval was ideal to quickly mark on vs. off task behavior by the timer going off, the researcher quickly glancing around the room, and marking tallies in a pre-created data sheet containing the arbitrary student ID, on and off task column, and time/date listing. Time of start and end of the circle time was recorded as well. Data was collected for one class three times per week and the other class two times per week at each of three different whole group times of differing lengths due to MWF and T/Th class schedule for preschool. Data was collected from October 5 to November 18 with data being collected over a course of 15 school days for the MWF class and 12 school days for the T/Th class. Of these, data was collected 3 school days in each classroom as a baseline (before introduction of cushions), 5 school days while using the cushions, and finally 7 school days without the cushions again in the MWF class and 4 school days without the cushions in the T/Th class. The Tuesday/Thursday class did have one final day with a choice of cushions given for use (November 18th).

Cushions were assigned to students mostly based on their level of off-task behavior during the baseline collection. Students that were the most off task during baseline were assigned 3" thickness, while students with lesser off task behaviors were assigned to 2" thickness, and students displaying the most on task behaviors were assigned to 1" thickness. Once cushions were introduced, students were taught the expectations, reminded of the expectations, and allowed to choose if they wanted to use them during the two later in the day circle times due to the short nature of the greeting circle time each day where the cushions were not used. Cushions were stored in each child's cubby when not in use and students were allowed to retrieve them at the beginning of circle times if they wished to use them.

Definitions

On-task behavior was defined as: seating in a crisscross, mountain, or mermaid method, hands in lap or close to it, eyes/face in direction of teacher, and not speaking unless called upon. Participation was also an on-task behavior during movement times. Off-task behavior was defined as: rolling around or lying down on the carpet, playing with shoelaces, poking or kicking other students, blurting out of turn, not participating during movement times, not looking at/in direction of teacher, or being out of their defined space.

Results

Tallies were entered into a spreadsheet and the average percentages of off task were calculated and graphed. Graphs 1, 2, 3, 4, and 5 represent the MWF class data. Graphs 6, 7, 8, 9, and 10 represent the T/Th class data. Tables 1 and 3 represent the MWF data and Tables 2 and 4 represent the T/Th data.

Description of Tables and Graphs

Table 1 and Table 2 demonstrate data from Monday-Wednesday-Friday and Tuesday-Thursday classes showing the date and particular circle time, indicated by a, b, or c, with a being the greeting circle first thing in the morning ~8:30 a.m., b being the after gross motor learning/story/introduction to table work time ~10:00 a.m., and c being the after-nap story and alphabet song time ~1:15 p.m. Of note, even during the use of cushions, the first circle time was deemed to be too short to use the cushions by both the classroom teacher and the researcher, thus, the students had option to use them during the b and c circles during those times. S1, S2, S3, and S4 designated 4 different target students in each classroom, two boys and two girls in each room. RED blocks denote the researcher forgetting to note the actual end time of the circle, so the time was estimated by the amount of behavior opportunities recorded in that time. Blank blocks indicate an absence of student resulting in no data for that block. Graphs 4, 5, 9, and 10 are based on the data in tables 1 and 2.

Table 3 and Table 4 demonstrate the data from Monday-Wednesday-Friday and Tuesday-Thursday as a whole day average comparing groups where T1 was the students assigned the 1" thick cushion, T2 was the students assigned the 2" thick cushion, T3 was the students assigned the 3" thick cushion, Girl and Boy were comparison of girls versus boys, and IEP and No IEP were comparisons of those students on IEP with those students not on IEP. Graphs 1, 2, 3, 6, 7, and 8 depict the data from tables 3 and 4.

Findings showed that though there was not much difference in the on vs. off task behavior of the students as a class across baseline vs. cushion use vs. removal of cushions, a trend did emerge showing that the length of the whole group time had a negative effect on student on-task behavior at the preschool level (the second circle time (b) averaged around 15-20 minutes daily). Cushion thickness one and two seemed to be most effective, however, those were originally assigned to students who had better attending and behavior skills to begin with.

Social validity was established by asking the students whether they preferred sitting with cushions or without. Though social validity is a subjective measure, it is important in that it shows the preferences of the students who used the cushions. The majority of students in both classes preferred the use of cushions because it was softer for sitting on the floor. Only two students per class said they preferred to not use the cushions. (See table 5).

Impact on Teaching

While the purpose of this project was to help this researcher find something to assist a particular student in the ability to attend and demonstrate active listening skills at circle time, many things were learned. The first being that the student in question did not have any better attention or behavior at circle time with or without the cushion. Overall, cushions did not seem to affect the on-task behavior of students at circle time. However, the researcher does note (observationally) that 3" cushions seemed to be too thick for some students as they had difficulty staying on them. If they wiggled, they tended to lose their balance and fall over. The reason for this is unknown at this time, though it could be related to sensory issues or a lack of core strength in some students. Second, for these students, the graphs demonstrated that girls were generally more engaged at circle time than the boys. Third, for some students, the cushions did seem to make a small difference, but this again demonstrates that students are individuals and there is no one-size fits all way to keep all students engaged and on task all the time. Fourth, generally the trend showed that students were more likely to be on task first thing in the morning and with shorter circle experiences which correlates with the shorter attention span of young children. Students were more off task with longer circle times and the later in the day it was.

Considerations for Future Research

Future implications for research would be to continue the data collection over a longer period of time in order to use a better research structure of baseline for one to two weeks, cushion use for 2 weeks, removal for one to two weeks, returning the cushions for two weeks, and removal again to determine if this longer period of time would show better results as the cushions would not be so new to the students. Additionally, it would be interesting to see if students self-selected their cushion thickness if it would help them attend or not. One other consideration would be to collect data in a smaller interval than two minutes, which might show different results in that it would be more indicative of the behavior throughout the entire circle time.

Limitations

Within the confines of the study, it should be noted that there were occasions when the researcher (myself) was called out of the classroom during data collections to assist with behavior issues in another classroom, was called to take over the classroom for the general education teacher, was absent, or classroom activities were not conducive to data collection such as a visit by firefighters or a school presentation/activity like a fun run. Monday-Wednesday-Friday class had the greatest frequency of interruption of data collection periods. There were occasions when quarantines were in place due to the COVID-19 pandemic and target students were not able to be observed due to their placement in quarantine situations. Monday-Wednesday-Friday class was affected the most by quarantine situations. Additionally, the researcher admits inconsistency in the starting of the two-minute timer at exactly the start of the whole group instruction each time, sometimes waiting 1-2 minutes after the beginning of the session to start the two-minute intervals due to assisting students with tasks at the beginning of the sessions.

Tables

Table 1: Monday/Wednesday/Friday									
	MWF Data								
		Per							
	Date -	circle off	Avg day	Minutes	04			0.4	
	Time	task	Off task	at circle	51	52	53	54	
Baseline	10/8 c	20%	20%	15	43%	57%	29%	29%	
	10/11 a	6%	12%	7	33%	33%	33%	0%	
	10/11 b	19%	12%	15	14%	57%	57%	29%	
	10/11 c	12%	12%	14	33%	67%	50%	0%	
	10/13 a	15%	15%	5			50%	0%	
	10/13 b	16%	15%	17	57%	100%	14%	0%	
	10/13 c	14%	15%	14	20%	40%	40%	0%	
Cushion	10/15 a	16%	13%	5		50%	50%	0%	
	10/15 b	14%	13%	20	33%	78%	56%	0%	
	10/15 c	10%	13%	10	0%	75%	25%	0%	
	10/18 a	4%	9%	7		33%		0%	
	10/18 b	11%	9%	23		78%	22%	22%	
	10/18 c	11%	9%	12		100%	50%	0%	
	10/20 a	9%	8%	4				0%	
	10/20 b	9%	8%	20	22%	44%	11%	0%	
	10/20 c	6%	8%	10		25%	25%	0%	
	10/27 a	6%	15%	6		33%		0%	
	10/27 b	20%	15%	20		55%	36%	45%	
	10/27 c	19%	15%	15		71%	71%	43%	
	10/29 a	13%	13%	8	0%	0%	100%	0%	
	10/29 b	13%	13%	12	0%	60%	60%	20%	
No Cushion	11/1 a	8%	13%	5	0%		67%	0%	
	11/1 b	19%	13%	21	11%		56%	11%	
	11/3 a	5%	11%	5				0%	
	11/3 b	20%	11%	16				33%	
	11/3 c	10%	11%	14				0%	
	11/5 a	9%	9%	5				0%	
	11/5 b	6%	9%	11				0%	
	11/5 c	13%	9%	10				25%	
	11/10 a	20%	20%	7	0%				
	11/10 b	20%	20%	21	44%	67%		11%	
	11/12 a	14%	16%	5				50%	
	11/12 b	18%	16%	14	17%	67%	33%	67%	
	11/12 c	15%	16%	10	50%	75%	0%	25%	
	11/15 a	0%	4%	5	0%			0%	
	11/15 b	7%	4%	18	0%	43%	43%	0%	
	11/17 a	4%	8%	6	0%		50%	0%	
	11/17 b	11%	8%	15	29%	43%	29%	0%	

	T/Th Data							
		Per						
	-	circle off	Avg daily	Minutes				
	Date/Time	task	off task	at circle	S1	S2	S3	S4
Baseline	10/5/2021 a	21%	16%	4	0%	50%	50%	
	10/5/2021 b	12%	16%	35	0%	12%	35%	35%
	10/5/2021 c	20%	16%	15		43%	71%	43%
	10/7/2021 c	17%	17%	13	0%	33%	33%	33%
	10/12/2021 a	19%	11%	7		100%	0%	
	10/12/2021 b	11%	11%	22	0%	70%	40%	0%
	10/12/2021 c	7%	11%	18	14%	14%	14%	0%
With Cushions	10/14/2021 a	0%	6%	5	0%	0%	0%	
	10/14/2021 b	11%	6%	14	0%	14%	71%	
	10/14/2021 c	6%	6%	12	0%	40%	0%	
	10/19/2021 a	31%	22%	6		100%	100%	0%
	10/19/2021 b	11%	22%	20	44%	22%	33%	11%
	10/19/2021 c	27%	22%	13		40%	40%	20%
	10/26/2021 a	10%	12%	5		33%	33%	
	10/26/2021 b	13%	12%	10		0%	40%	40%
	10/28/2021 a	9%	7%	6	0%	0%	100%	0%
	10/28/2021 b	7%	7%	27	0%	20%	30%	0%
	10/28/2021 c	7%	7%	10	0%	0%	30%	0%
Without Cushions	11/2/2021 a	11%	13%	6	0%	50%		0%
	11/2/2021 b	15%	13%	23	10%	40%		20%
	11/2/2021 c	13%	13%	15	0%	14%		43%
	11/4/2021 a	17%	10%	6	0%	100%	0%	
	11/4/2021 b	5%	10%	15	0%	0%	14%	
	11/11/2021 a	29%	17%	6	0%	100%		
	11/11/2021 b	16%	17%	19	11%	56%		
	11/11/2021 c	9%	17%	15	0%	33%		
	11/16/2021 a	6%	8%	5	0%	50%	0%	
	11/16/2021 b	9%	8%	20		20%	40%	
Cushion Choice	11/18/2021 b	12%	7%	15		33%	50%	
	11/18/2021 c	3%	7%	9	0%	33%	0%	

Table 2: Tuesday-Thursday

	Monday/Wednesday/Friday by group								
Number of Students per group			5	6	6	7	10	6	11
		Avg class off task	Avg T1	Avg T2	Avg T3	Avg Girl	Avg Boy	IEP	No IEP
Baseline	8-Oct	20%	10%	11%	39%	20%	20%	23%	18%
	11-Oct	12%	1%	11%	25%	11%	13%	14%	11%
	13-Oct	15%	3%	17%	26%	12%	19%	16%	15%
Cushion	15-Oct	13%	0%	16%	24%	8%	17%	16%	12%
	18-Oct	9%	2%	5%	19%	6%	10%	17%	4%
	20-Oct	8%	3%	5%	18%	6%	10%	6%	9%
	27-Oct	15%	3%	12%	26%	11%	17%	18%	13%
	29-Oct	13%	0%	17%	17%	16%	12%	8%	17%
No Cushion	1-Nov	13%	0%	20%	16%	13%	13%	17%	12%
	3-Nov	11%	2%	14%	16%	2%	15%	10%	12%
	5-Nov	9%	11%	0%	15%	11%	8%	4%	12%
	10-Nov	20%	6%	26%	25%	10%	26%	22%	19%
	12-Nov	16%	0%	3%	37%	11%	18%	23%	10%
	15-Nov	4%	0%	5%	6%	5%	4%	6%	3%
	17-Nov	8%	0%	13%	10%	9%	7%	5%	10%

Table 3 – Monday-Wednesday-Friday by group

Table 4 – Tuesday-Thursday by group

	Tuesday-Thursday by group								
Number of Students per Group			4	5	6	10	5	2	13
		Avg daily off task	Avg T1	Avg T2	Avg T3	Avg Girl	Avg Boy	IEP	No IEP
Baseline	10/5	16%	5%	7%	29%	13%	24%	7%	18%
	10/7	17%	4%	10%	31%	15%	20%	8%	18%
	10/12	11%	2%	6%	21%	7%	19%	12%	11%
Cushion	10/14	6%	1%	3%	12%	6%	5%	5%	6%
	10/19	22%	10%	19%	31%	20%	25%	48%	19%
	10/26	12%	7%	3%	23%	9%	19%	0%	12%
	10/28	7%	3%	2%	13%	10%	3%	0%	9%
No Cushion	11/2	13%	6%	9%	20%	9%	22%	5%	15%
	11/4	10%	4%	2%	18%	3%	30%	5%	10%
	11/11	17%	0%	12%	33%	13%	23%	4%	18%
	11/16	8%	0%	8%	13%	6%	12%	0%	8%
Choice	11/18	7%	0%	10%	7%	6%	11%	0%	8%

Table 5 – Social Validity

Social Validity							
	MWF Class	T/Th Class					
% preferring cushions at circle time	59%	67%					
% preferring no cushion at circle time	12%	13%					
% with no opinion/response	29%	20%					

Graphs









Graph 3 MWF – Students on IEPs vs. Students not on IEPs







Graph 5 MWF – Target Student Off Task Average by Time of Day per Week







Graph 7 T/Th - Girls vs. Boys













References

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