

THE EFFECT OF DAILY PROGRESS REPORTS ON PARENTAL ACADEMIC SUPPORT:
COMPARING PAPER AND ELECTRONIC COMMUNICATION

by

Jonathan D. Schneider

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University

2016

THE EFFECT OF DAILY PROGRESS REPORTS ON PARENTAL ACADEMIC SUPPORT:
COMPARING PAPER AND ELECTRONIC COMMUNICATION

by

Jonathan D. Schneider

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University, Lynchburg, VA

2016

APPROVED BY:

ELIZABETH ELGEN HILLMAN, Ph.D., Committee Chair

MICHELLE JONES BARTHLOW, Ed.D., Committee Member

MARK D. FOLEY, Ed.D., Committee Member

Scott Watson, Ph.D., Associate Dean, Advanced Programs

ABSTRACT

In this age of data based decision making and accountability, parent involvement and data collection are paramount. This study represents a significant contribution to educational research by extending the understanding of home-school communication media with specific regard to daily progress reports. The purpose of this study was to compare communication scores of parents of students using paper daily progress reports with communication scores of parents of student using electronic daily progress reports. This quasi-experimental posttest-only control group design research study compared survey results of parents (N = 45) of middle school students currently using a DPR as part of an intervention in a middle school located in central Connecticut. The survey instrument was the Parental Academic Support Scale (PASS) containing five subscales: Academic Performance, Classroom Behavior, Preparation, Hostile Peer Interactions, and Health. Independent *t* tests were conducted to discover whether the mean communication scores between groups of parents were significantly different. A chi-square (χ^2) analysis was conducted to evaluate difference in media preference between groups. Significant differences in communication practices and preferences were found. Parents of children using electronic daily progress reports practiced more regular communication with teachers. Likewise, parent media preferences were significantly different between groups. Recommendations for further research are discussed.

Keywords: Home-school communication, Multi-Tiered Systems of Support (MTSS), School-Wide Positive Behavior Interventions and Supports (SWPBIS), Daily Progress Report (DPR), Parental Academic Support, Parent-Teacher Communication

Copyright Page

Copyright © 2016

Jonathan D. Schneider

Dedication

On March 2, 2013, literally a few hours before I was to take the Graduate Record exam required for acceptance into the Liberty University doctoral program, my father passed away. He had slipped in the shower and bumped his head. What had seemed to be an insignificant bump caused internal bleeding in his head, ending his life the following morning. I stayed with him in the hospital until the early morning. Nothing in this life is insignificant, even those things which seem at first to be. Though exhausted, I chose to take the Graduate Record exam and passed. That is how this journey began. This work is dedicated in part to the memory of my father, Jack M. Schneider.

Over the next three years, until even now, my family would be forced to endure each day without my ability to be fully present for them. My wife and son have persevered during this time, putting up with my frustrations and joining me in my joys. They have endured with me through this long and tedious process and have remained committed, as my biggest fans. I have truly found a wife of noble character, faithful unto the end. The night I defended this dissertation, Anita and Joseph were there with me, cheering me on. I am so grateful to the LORD for them, and to them I dedicate this work and any fruit that it may yield.

Acknowledgments

“No wisdom, no understanding, no counsel can avail against the LORD. The horse is made ready for the day of battle, but the victory belongs to the LORD.” Proverbs 21:30-31(ESV)

Table of Contents

ABSTRACT	3
Copyright Page.....	4
Dedication	5
Acknowledgments.....	6
Table of Contents	7
List of Tables	12
List of Figures	13
List of Abbreviations	14
CHAPTER ONE: INTRODUCTION.....	16
Background.....	17
Historical Context	17
Social context.....	21
Theoretical Context.....	24
Summary of Background	26
Problem Statement	28
Purpose Statement.....	29
Significance of the Study.....	30
Research Question	32
Null Hypotheses.....	32
Definitions.....	33
Chapter Summary	35
CHAPTER TWO: LITERATURE REVIEW.....	38

Introduction.....	38
Search Procedures.....	38
Chapter Organization.....	40
Review of Literature	41
Media Richness Theory	41
Home-School Communication.....	50
Multi-Tiered Systems of Support.....	57
Parental Involvement	69
Review of Literature Summary.....	79
CHAPTER THREE: METHODS	83
Design.....	83
Research Question	87
Null Hypotheses.....	87
Participants and Setting.....	88
School Culture	91
School Climate.....	92
Instrumentation	94
PASS - Communication Scale	97
PASS - Media Preference	100
Procedures.....	101
Setup.....	101
Training for Staff, Students, and Parents	103
Coordinator and Student Protocols	105

Parent PASS Participation	108
Data Analysis	109
PASS - Communication Scale: Independent t Test	109
PASS - Media Preference: Chi Square Test	111
Assumption Tests.....	111
Random Assignment.....	113
Independence	113
Level of Measurement	114
Expected Count.....	114
Normality and Outliers	114
Homogeneity of Variance	115
Chapter Summary	116
CHAPTER FOUR: FINDINGS.....	117
Research Question	118
Null Hypotheses.....	118
Descriptive Statistics.....	118
PASS - Communication Scale	118
PASS - Media Preference	121
Results... ..	122
Hypothesis One: PASS - Communication Scale	123
Hypothesis Two: Academic Performance	126
Hypothesis Three: Classroom Behavior	129
Hypothesis Four: PASS - Media Preference.....	132

Chapter Summary	134
CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS	136
Discussion.....	136
Hypothesis One: PASS – Communication Scale.....	137
Hypothesis Two: Academic Performance Subscale	139
Hypothesis Three: Classroom Behavior Subscale	140
Hypothesis Four: PASS - Media Preference.....	142
Conclusions.....	143
Implications.....	144
Theoretical Implications	144
Practical Implications.....	145
Limitations	146
Recommendations for Future Research	148
REFERENCES	150
APPENDICES.....	164
Appendix A: Parental Academic Support Scale	164
Appendix B: IRB Approved Consent Form.....	166
Appendix C: Liberty IRB Exemption Letter	168
Appendix D: Permission to use and reproduce the PASS	169
Appendix E: Daily Progress Report (DPR-SP)	170
Appendix F: Permission to reproduce DPR-SP.....	171
Appendix G: Daily Progress Report DPR-X	172
Appendix H: Teacher spreadsheet with links to DPR-X	173

Appendix I: Parent/Student Website View 174

Appendix J: CICO Student Incentive Survey 175

List of Tables

Table 1: Town and School Demographics.....	89
Table 2: Parent and Student Demographics.....	90
Table 3: Test Items Included in the Statistical Analysis.....	112
Table 4: PASS Communication Scale Scores by Group.....	119
Table 5: PASS Communication Scores by Question.....	121
Table 6: PASS Mode Preference by Group.....	122
Table 7: PASS Communication Scale Scores Normality.....	125
Table 8: Levene’s Test of Homogeneity of Variance.....	125
Table 9: PASS Communication Scale Independent <i>t</i> Test Summary.....	126
Table 10: PASS Academic Performance Normality.....	128
Table 11: PASS Classroom Behavior Normality.....	131
Table 12: Media Preference Selections by Group.....	134
Table 13: The Top Five PASS Items Ranked by Importance and Frequency.....	140

List of Figures

Figure 1: Schneider Dissertation Conceptual Framework.....	42
Figure 2: Media Richness Illustration.....	44
Figure 3: Multi-Tiered Systems of Support Framework.....	59
Figure 4: Random Assignment of Intact Groups.....	86
Figure 5: Boxplots for Communication Scale Scores by Group.....	124
Figure 6: Boxplots for Academic Performance Subscale Scores by Group.....	128
Figure 7: Boxplots for Classroom Behavior Subscale Scores by Group.....	131
Figure 8: Media Preference Scores by Group.....	133
Figure 9: Lean to Rich Media.....	139

List of Abbreviations

Advanced Placement (AP)

Behavior Education Plan (BEP)

Behavior Intervention Plan (BIP)

Check in / Check out (CICO)

Computer Mediated Communication (CMC)

Daily Progress Report (DPR)

Daily Progress Report Standard Practice (DPR-SP)

Daily Progress Report Experimental (DPR-X)

Daily Report Card (DRC)

Digital Subscriber Line (DSL)

Direct Behavior Rating Single Items Scales (DBR-SIS)

Education Resources Information Center (ERIC)

Educational Service Provider (ESP)

Family Educational Rights and Privacy Act (FERPA)

Focused Support Program (FSP)

Good Behavior Note (GBN)

Google Apps for Education (GAPE)

Individualized Education Plan (IEP)

Infrastructure as a Service (IaaS)

Local Education Agency (LEA)

Media Richness Theory (MRT)

Multi-Tiered Systems of Support (MTSS)

National Center for Educational Statistics (NCES)

National Network of Partnership Schools (NNPS)

National School Public Relations Association (NSPRA)

National Writing Project (NWP)

No Child Left Behind Act (NCLB)

Online Educational Service (OES)

Parental Academic Support Scale (PASS)

Personally Identifiable Information (PII)

Planning and Placement Team (PPT)

Privacy Technical Assistance Center (PTAC)

Protection of Pupil Rights Amendment (PPRA)

Response to Intervention (RTI)

School Wide Positive Behavior Interventions and Supports (SWPBIS)

Scientific Research Based Intervention (SRBI)

Software as a Service (SaaS)

Special Education (SPED)

Student Assistance Team (SAT)

Terms of Service (TOS)

CHAPTER ONE: INTRODUCTION

In this digital age of data based decision making and accountability, the importance of collecting and disseminating data that is both timely and accurate to teachers, administrators and parents, is essential (No Child Left Behind Act of 2001 [U.S. Department of Education, 2015], Local Applications and Needs Assessment, 2002; Data Quality Campaign, 2015; Guidera, 2015). A recent National School Public Relations Survey (2011) shows that parents actually prefer electronic communication via e-mail, e-newsletters, and other web-based media rather than traditional media. Accessibility to the internet is continuously increasing in the United States, as is smartphone ownership (Smith, McGeeney, Duggan, Rainie, & Keeter, 2015; Lenhart, et al., 2015; National Center for Education Statistics, 2015). Thompson, Mazer, and Grady (2015) confirm that parents prefer the convenience offered by smartphones for communication with teachers. These findings are illustrative of American culture at the beginning of the 21st century; they have implications for educational data collection and dissemination to parents and also for this study.

In the following chapter, the background will provide the reader with a historical, social and theoretical context for understanding and appreciating the problem that is under investigation. This problem will lead to the intended purpose of the study. The purpose will be substantiated through a discussion of the study's significance within the existing body of literature. This will be followed by the actual research question, hypothesis, and identification of the variables under examination. Finally, words and phrases important to this study will be defined and explained.

Background

Historical Context

Studies continue to demonstrate that as parental involvement increases, rates of student achievement increase (Hoover-Dempsey & Sandler, 1995; Hoover-Dempsey & Sandler, 1997; Sheldon, 2002). The original theoretical model of parent involvement was developed by Hoover-Dempsey and Sandler (1995, 1997) and continues to provide the basis for parent and family involvement in the 21st century (Epstein, 2007; Liu, Black, Algina, Cavanaugh, & Dawson, 2010; Sheldon, 2002; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dampsey, 2005). Two important constructs for understanding parent involvement as defined by Hoover-Dempsey and Sandler (1995, 1997) are parental role construction and parental efficacy. Parental role construction has to do with the subjective beliefs about what parents ought to do concerning their children's education. These beliefs vary from parent to parent, on a continuum that ranges from being completely involved in all aspects of their children's education, to being completely uninvolved. The second construct is parental efficacy. This has to do with parents' beliefs about the effect of their actions, as parents, upon their children's education. If parents have a heightened sense of self-efficacy, they will persist in actively controlling their children's education. If parents' sense of self-efficacy is low, they will tend to be more passive with regard to their children's education (Hoover-Dempsey & Sandler, 1995, 1997).

In the Epstein (2015) model of parental involvement, engagement is expanded to include the influence of family and community involvement on student achievement. Positive home environment, home learning activities, and communication are contributing factors that influence student achievement. Parental- involvement research led to the established connection between parental involvement and students' academic achievement (Epstein J. L., 2010; Hoover-

Dempsey & Sandler, 1995, 1997). This research has been recognized by the U.S. Department of Education and has helped provide guidance to inform government incentives and national policies (Goals 2000 [103rd Congress, 2015]; NCLB, 2001). These policies provide incentives for school districts to encourage parent and family partnerships and to increase parental involvement. These measures further increase the focus of researchers to develop scales of measurement to assess and evaluate the various programs that resulted from these policies. One such measure is the Parent Academic Support Scale (PASS) that will be used as part of this study.

Since NCLB became law, schools have been creating policies and implementing practices that are evidence based and specifically designed to provide every student with the specific interventions he will need to be academically successful. One area that research has demonstrated effective is the use of Multi-tiered Systems of Supports (MTSS). These multiple-tiered interventions match each child with the level of support he would need to achieve at high levels (Connecticut State Department of Education Bureau of Special Education, 2014; Cook, Lyon, Kubergovic, Wright, & Zhang, 2015). MTSS is an evidence-based, multi-tiered framework of supports designed to systematize the way in which schools meet the needs of individual students. The law requires that evidence-based interventions be used and that data be collected and used to inform decision making so that every child can achieve at high levels (U.S. Department of Education, 2015). In a practical sense, this means that children who are succeed when receiving the general level of instruction continue to receive the general level of instruction; students who are not successful are systematically identified through assessment. The academic MTSS model used in Connecticut is known as Scientific Research Based Intervention (SRBI), also known as Response to Intervention (RTI). The behavioral model used

in Connecticut is known as School Wide Positive Behavior Interventions and Supports (SWPBIS) (Connecticut State Department of Education Bureau of Special Education, 2014).

This MTSS model provides a proactive approach to emphasizing the teaching and reinforcement of appropriate behaviors. The three-tiered model allows for resources to be directed according to the needs of individual students. The universal tier (Tier 1) is applied to the entire school population, with successive tiers (Tier 2 and 3) increasing the intensity of interventions. As with any evidence-based intervention, data collection and dissemination are central to evaluation and problem-solving (Crone, Hawken, & Horner, 2010; Simonsen, et al., 2011; Sugai & Simonsen, 2013; Sugai & Simonsen, 2012).

Public schools across the nation have been experiencing success using multi-tiered intervention programs to improve both academic and social-emotional outcomes (Sugai & Simonsen, 2012). Many schools have adopted some form of Response to Intervention (RTI) in order to address academics and attendance (Castro-Villarreal, Rodriquez & Moore, 2014; Kearney & Graczyk, 2014). To maintain and improve behavioral expectations, many schools have adopted SWPBIS, a multi-tiered behavioral support model (Hawken & Horner 2003; Sugai & Simonsen, 2012; Sugai & Simonsen, 2013).

RTI is the academic arm of multi-tiered interventions; the behavioral arm is known as SWPBIS. These multi-tiered interventions require the use of research-based practices and decision making that is based on collected data. Both of these intervention models have three tiers that graduate intervention and support levels from the general population (Tier 1) to more specific, higher needs-students (Tier 2 and Tier 3).

Tier 1 is the universal tier, a general approach for all students including clearly posted expectations, and appropriate positive reinforcement. While Tier 1 is applicable to the general

population of students as universal interventions, research has shown that Tier 1 is effective for about 80% of a typical middle school population (Sugai & Simonsen, 2012). Students who need Tier 2 interventions make up approximately 15% of a typical middle school population, while students needing Tier 3 supports and interventions make up 5% of the total population (Crone, Hawken, & Horner, 2010; Stormont, Reinke, Herman, & Lembke, 2012).

According to Crone et al. (2010) students in these upper two tiers make use of a Daily Progress Report (DPR) that is carried with them from class to class in order to monitor their behavior. The DPR is a tool used for a variety of data collection purposes. The DPR can be an intervention on its own, or it can be used as part of a larger intervention program (Hawken, Bundock, Kladis, O'Keeffe, & Barrett, 2014). The DPR is typically a paper-based progress monitoring tool (see Appendix E). The student in a Tier 2 intervention picks up the DPR in the morning from a check-in location and carries it to each class, handing it to the teacher upon arrival and then collecting it back, scored and signed, prior to leaving the class. The student has a specified point goal for the day. If the student makes the point goal a reinforcement of some kind is given. Reinforcements include stickers, edible treats, or coupons for purchases of school supplies at the school store. (Crone, et al., 2010; Hawken et al., 2014).

The DPR medium will be the independent variable used in this study. The standard practice paper-based (DPR-SP) will be compared to the electronic version (DPR-X) that allows for collaborative sharing using the Google Apps for Education (GAFE) platform. The dependent variable will be measured by a survey sent to parents of Tier 2 students to ascertain any difference in parent involvement between groups using the DPR-SP and the DPR-X.

Based on the findings of Stormont, Reinke, Herman, and Lembke (2012), Tier 2 is in need of research and development, and has not received the same degree of attention as Tier 1

and Tier 3. Tier 2 uses research-based strategies to increase monitoring and reinforcement for students not responsive to the universal tier but not necessarily in need of Tier 3 level supports. Various Tier 2 interventions that make use of a DPR are being researched and developed to meet the more intensive needs of students in this secondary tier; however, the research is not without its challenges (Stormont et al., 2012).

Social context

Public education continues to shape and be shaped by the most current technologies (Kong, et al., 2014). In the 21st century, The United States continues to see phenomenal change in the ubiquity of mobile technology and access to the internet by people of all ages (National Center for Education Statistics, 2015; Thompson, Mazer, & Grady, 2015; Lenhart, et al., 2015). Students, teachers, parents, and families are now, more than ever, connected to one other via mobile devices. This ubiquity and accessibility has perpetuated a desire and expectation for electronic means of communication because these electronic media provide parents with the educational information that they need, whenever and wherever they need it. According to Guidera (2015), parents want transparency: to be able to see the educational data and know how it is being used by teachers to support their children.

The National Center for Education Statistics (2015) Parent and Family Involvement in Education Survey showed that of the 297 million people surveyed in the United States, 74.7% use the internet. Of those who use the internet, 92.6% use the internet from home, and of those using the internet from home, 98.6 % use high speed internet as opposed to dial-up access. In another survey by the Pew research center, Smith, McGeeney, Duggan, Rainie, and Keeter (2015) found that 64% of Americans own smartphones. This demonstrates significant growth from 2011, when the percent of Americans who owned smartphones was only 35%. Of the

younger Americans (ages 18-29) owning smartphones, 15% depend heavily on their smartphone data plan to access the internet (Smith, McGeeney, Duggan, Rainie, & Keeter, 2015). In a report by Lenhart, et al. (2015), the researchers found that 92% of American teenagers, ages 13-17, access the internet daily, with 56% reporting multiple visits each day. Mobile devices such as smartphones and tablets are used by 91% of teenagers to go online (Lenhart, et al., 2015).

Mobile devices are now embedded in the work of teaching and learning. Advanced Placement (AP) and National Writing Project (NWP) teachers have embraced these mobile technologies adapting them to their classroom instruction with 73% reporting that “they and/or their students use their mobile phones in the classroom or to complete assignments.” (Purcell, Heaps, Buchanan, & Friedrich, 2015, p. 2) Thompson, Mazer, and Grady (2012, 2015) continue to find that convenience is a determining factor in the mode selection for parent-teacher communication. With the increasing popularity of smartphones, parent preference for email communication over other modes of communication with teachers increased from 2:1 to 5:1 in a relatively short time (from 2012 to 2015) (Thompson et al., 2015). The ubiquitous nature of mobile technologies used and accessed by students, teachers, and parents, accompanies concerns pertaining to privacy and safety. Guidera (2015) points out that parents want to believe that educational data is being used to help their child succeed and is being kept private and secure. These concerns seem to be justified by recent statistics documenting the incidence of identity theft and fraud; a 2010 study on child identity theft found that 10.2% of children had a social security number being used fraudulently. One reason criminals steal children’s identities is that their social security numbers represent a “clean slate” for fraudulent activities; there is no credit history or other barriers to impede potential thieves (Lifelock, 2015).

Heralded by the educational community from Kindergarten through grade 12, and from undergraduate through post-graduate schools, educational communities across the United States and overseas are adopting the suite of collaborative tools known as Google Apps for Education (Google, 2015). According to Meister and Solow-Niederman (2014) the 21st century cloud-based services are not only cost-effective but have changed the educational landscape of communication among stakeholders. For instance, the cloud has made sharing of a single document by users in different locations a reasonable task. A document can be viewed and edited by multiple individual users at the same time (synchronously) or at different times (asynchronously) from completely different locations. Traditionally, one document could be edited by one individual at a time. These traditional means of collaboration and communication between and among students, parents, teachers and administrators are being transformed and unified through the use of cloud technologies that transcend former space/time boundaries while improving privacy and security (Google Inc., 2015).

Google Apps For Education (GAFE) has made privacy and security the first priority for its educational suite. GAFE has signed and affirms the *Student Privacy Pledge* (Pledge to Parents & Students Leading School Service Providers Pledge to Advance Student Data Protections for Student Personal Information, 2015). The pledge vows to make privacy and security of student work and data the highest priority. GAFE does not allow advertising in its services, so that students are not distracted by ads while they are working. They “vigorously resist any unlawful attempt to access our customers’ data, whether it be from a hacker or a government body” (Google, 2015, p. 1) Google has some of the world’s best computer security experts on its team of over 450 full time engineers; they work to protect and secure information. Its security team has published academic research papers on security and led the way in developing protections

such as 2-step verification and multi-leveled encryption of all data (Google, 2015). GAFE has developed its suite of tools to provide the educational world with a cost effective solution for providing parents with transparency and security (Google Inc., 2015). Within this study, student names will be replaced by code to provide an additional level of security and privacy.

Theoretical Context

Media Richness Theory (MRT) as defined by Daft and Lengel (1984, 1986, 1989) attempts to explain how various communication media are selected and able to effectively transfer meaning to a recipient. The theory is rooted in information- processing theory. MRT has been used to explain how different media are used, more or less effectively, to communicate information. According to Daft and Lengel (1986), the goal for effective communication is the reduction of two qualities, namely uncertainty and equivocality. By reduction of these two elements, clear communication and shared meaning are more likely. MRT theorists classified mediums ranging from lean to rich, with leaner communication forms (such as a sign comprised of text or numbers) being more general in nature, and richer communication forms (such as body language and tonal cues), which require more clues in order to interpret, being more complex. The richest medium in this case is face to face communication (Daft & Lengel, 1986).

Thompson and Mazer (2012) have used MRT as a theoretical base to explore educational communication. They have devoted their recent work to studying the communication preferences and practices of parents with teachers. With the continual growth in smartphone ownership Thompson, Mazer, and Grady (2015) have discovered that the communication preferences of parents have been shifting. Their findings show that, between 2012 and 2015, preference for e-mail over other modes of communication has doubled. Parents now prefer communication through electronic means such as email or text messages, via mobile devices, rather than through

traditional, paper-based media. In order to measure these preferences, Thompson, Mazer, & Grady, (2015) have developed the Parental Academic Support Scale (PASS).

Parent- involvement studies by researchers such as Hoover-Dempsey and Sandler (1995), Epstein J. L. (2007), Epstein, et al., (2009) have established the connection between improved student outcomes and parental involvement. This correlation has fueled research to develop ways of measuring in order to evaluate program effectiveness. Social support research has been one area of research from which social support measurement scales have developed. Since these scales were lacking, inasmuch as they were unable to evaluate the parent as social support provider, Dr. Blair Thompson originate the PASS as a solution (Thompson & Mazer, 2012). The PASS was designed to ascertain the perspective of the parent in the academic support of his child, with specific regard to parent-teacher communication. The PASS is a 16-question survey that queries parents about their preferred form of communication, as well as the content of that communication. Both the medium and the message are important parts to understanding effective communication. MRT thus provides the theoretical basis for the PASS and for this particular research study.

Guidera (2015) encourages transparency to strengthen the relationship between home and school. She points to opening lines of communication between home and school as the first step in the process. Guidera goes on to argue that parents desire education data that they can understand and that will help inform their decisions and conversations with their children and their children's teachers. Regarding the ever-changing forms of communication in this digital age, Thompson, Mazer, and Grady (2015) have demonstrated that the convenience of email, text, and other electronic asynchronous forms of communication are becoming the preferred mode of parent-teacher communications from preschool through high school. Smartphones have made it

much more convenient for parents to communicate with their teachers. These 21st century changes in technology and communication methods necessitate further research studies to further examine their role and how they fit into the parent-teacher communication relationship (Thompson, Mazer, & Grady, 2015; Thompson & Mazer, 2012).

Summary of Background

Research continues to demonstrate the importance of parent, family, and community in the achievement of students in public school. Historically, Hoover-Dempsey and Sandler (1995, 1997) laid the theoretical and conceptual groundwork for questions concerning parent involvement. Two important elements were parental role construction and parental efficacy. Role construction concerns the shaping of norms for parent role in the education of their children. Beliefs about what their role should be are shaped by experience and upbringing. Similarly, parent efficacy concerns parent beliefs about how their actions at home can affect their child's education. Parents with a higher sense of self-efficacy tend to be more persistent in actively guiding their child's education. Lower parent self-efficacy corresponds to more passive parenting (Bandura, 1989; Hoover-Dempsey & Sandler, 1995; Hoover-Dempsey & Sandler, 1997).

MTSSs have been shown to improve both academic and behavioral outcomes for students in many public schools (Connecticut State Department of Education Bureau of Special Education, 2014; Cook, Lyon, Kubergovic, Wright, & Zhang, 2015). The academic MTSS program that has demonstrated success is known as RTI or in Connecticut, SRBI. The behavioral MTSS program that has demonstrated success is SWPBIS (Connecticut State Department of Education Bureau of Special Education, 2014). These programs use explicit teaching of expectations at every tier and provide more intensive interventions at each higher tier. The primary means of data collection in these upper tiers is the DPR. The DPR is the tool that is used

to collect the daily progress monitoring data used by the student assistant team, case manager, and others to make informed decisions to support the academic and behavioral success of upper tier students (Cook, Lyon, Kubergovic, Wright, & Zhang, 2015; Crone, Hawken, & Horner, 2010; Simonsen & Sugai, 2013; Sugai & Simonsen, 2013; Hawken, Bundock, Kladis, O’Keeffe, & Barrett, 2014).

The increased use of educational data to inform decisions that provide each student with the elements needed for personal success continues to show promise (Connecticut State Department of Education Bureau of Special Education, 2014). Increasing parental access to educational data and how it is used to make decisions provides transparency and opens a line of home-school communication. Nevertheless, increasing accessibility of information by making it available to all stakeholders through online access raises concerns about privacy and safety (Guidera, 2015). More research is needed to ascertain if *Google Apps for Education* (2015) may provide a secure, private, and efficient way to pursue the goal of increased accessibility of educational data, specifically DPR data to parents of Tier 2 students.

Parents continue to express their preference to receive information from schools electronically (National School Public Relations Association, 2011; Thompson, Mazer, & Grady, 2015). Using GAFE, student DPR data could be available instantly; this would provide more accessible means for parents who are using mobile devices. The more informed and equipped the parent is, the better he will be able to communicate with teachers, provide corrective feedback, and positive reinforcement to his child at home. Increased access to the DPR data could increase the parents’ role construction and efficacy as defined by Whitaker and Hoover-Dempsey (2013) by allowing them to see the daily data and review it with their children. Providing parents with more convenient, asynchronous ways to access educational data about their child’s daily

behavior in school could result in more informed parents as well as higher levels of parent-teacher communication, and may ultimately result in more effective Tier 2 programs.

Problem Statement

After conducting research on MTSS interventions, Myers, Briere III, and Simonsen (2015) recommend that schools using Tier 2 interventions have data collection and communication systems in place that will provide timely and accurate data. Decisions that are made with data that are flawed, partial-- or worse, non-existent-- are by definition poorly-grounded decisions. One of the problems noted by Lebel et al. (2012) with home-school communication using the DPR with Tier 2 students is that the paper-based forms were either not returned or returned unsigned. Simonsen, Myers, and Briere (2010) identified inconsistent data collection as a limitation of their research study. The students collecting data from their teachers on the DPR often lose the DPR in the course of moving from class to class. This is a common limitation identified in various studies involving Tier 2 students who are given the responsibility to carry and collect behavioral DPR data using a paper sheet. The result is that DPR data is revised by the student without permission, lost, or returned incomplete (LeBel, Chafouleas, Britner, & Simonsen, 2013; Filter, et al., 2007; Simonsen, Myers, & Briere, 2011, Hawken, Bundock, Kladis, O’Keeffe, & Barrett, 2014).

The problem is that while much research continues to be conducted on MTSS programs, such as SWPBIS, there is a lack of research on the actual data collection methods. The availability and ubiquity of internet and mobile technologies such as the Chromebook, GAFE, and the smartphone may provide a more effective way to collect and communicate DPR data. This DPR data is essential for informing the decisions being made by school personnel and involving stakeholders such as students and their parents in decision making. To date there have

not been any research studies published addressing the use of data collection methods like *GAFE* forms (2015) as a possible option for electronic data collection and dissemination in comparison to the paper-based data collection currently used to collect Tier 2 student data. This study aims to investigate any differences in effect on parental academic support that may result from providing electronic DPRs to students and parents as compared to the effect of providing paper-based DPRs to students and parents, which is the current standard practice.

Purpose Statement

The purpose of this quasi-experimental posttest-only control group study (Campbell & Stanley, 1963; Gall, Gall, & Borg, 2007) is to compare communication scores between parents whose children use paper daily progress reports and parents whose children use electronic daily progress reports to see if there is a significant difference in communication scores between groups. In this study the DPR groups will be defined as either standard practice (DPR-SP) or experimental (DPR-X). The control group (DPR-SP) of parents has children using paper DPRs while the treatment group of parents has children using electronic DPRs. The theoretical framework of this study is Media Richness Theory (MRT) by Daft and Lengel (1986) as it applies to the type of medium, paper-based or electronic, in effective communication of DPR data and the influence on parent involvement. Parental involvement will be defined and measured by the Thompson and Mazer (2012) Parental Academic Support Scale (PASS).

Two different types of daily progress reports will be used, one electronic and one paper-based. These daily progress reports will be used by students and teachers to monitor progress on a daily basis. The Independent Variable will be generally defined as the DPR type used for home-school communication (Appendices E and F). The DPR type will be either a paper-based daily progress report identified as Daily Progress Report Standard Practice (DPR-SP) or an

electronic daily progress report within this study identified as Daily Progress Report Experimental (DPR-X). The DPR-X will make use of GAFE electronic forms to securely collect and disseminate all student DPR data while the DPR-SP will continue the use of paper-based forms (Chafouleas, Jaffery, Riley-Tillman, Christ, & Sen, 2013; Christ, Riley-Tillman, Chafouleas, & Jaffery, 2011; Crone, Hawken, & Horner, 2010; Hawken, Bundock, Kladis, O'Keefe, and Barrett, 2014). A comparison of how the two types of communication may have impacted the parental involvement of each group will be analyzed and interpreted.

The dependent variable will be generally defined as the communication survey scores on the PASS. The PASS is a 16-item Likert scale survey centered on parental involvement regarding parent communication practices with teachers. The PASS is made up of two measures herein referred to as PASS - communication scale and PASS - preferred medium. Each measure is contained within 16 items across five factors; academic performance, classroom behavior, preparation, hostile peer interactions, and health (Thompson B., 2008; Thompson, Mazer, & Grady, 2015; Thompson & Mazer, 2012).

Significance of the Study

Public education faces a number of challenges when it comes to shaping students' attitudes and behaviors. Standard educational practices are not enough to help some students achieve at high levels (Sugai & Simonsen, 2012). This issue has led to efforts at using a more scientific approach to providing each student what he needs to succeed academically and behaviorally (Chafouleas, Kilgus, & Maggin, 2012; Crone, Hawken, & Horner, 2010; Simonsen & Sugai, 2013). School Wide Positive Behaviors Interventions and Supports (SWPBIS) is one model that has shown promise in shaping the way students behave and interact (Sugai & Simonsen, 2013).

Crone et al. (2010) suggests Tier 2 interventions are more cost effective than Tier 3 supports and interventions; for instance, one mentor can coordinate the Tier 2 program for up to 30 students. Rather than incur the expense of hiring additional staff members or placing students into special education programs, Tier 2 interventions are designed to be used by a range of adults, including paraprofessionals, guidance counselors, and teachers (Hawken & Horner 2003; Simonsen & Sugai, 2013; Simonsen, Myers & Briere, 2011; Sugai, O'Keeffe & Fallon, 2011). This economical feature contributes to the practical significance of this study.

An abundance of current SWPBIS research is focused on the secondary tier of interventions (Simonsen et al., 2011; Simonsen et al., 2010). The importance of this particular research study is multifaceted, including possible improved means of data collection and improved communication between and among various stakeholders at school and in the home. The increased accessibility of data may possibly increase levels of parent involvement.

The practical significance of this study is possible improvement of data collection and dissemination to increase accessibility of data to various stakeholders including parents and guardians. Increased accessibility of DPR rating scales should improve home-school communication by increasing parent-teacher communication. Increased parent-teacher communication should improve parental involvement, increasing parental academic support and increasing student achievement.

The empirical significance of this study is found in the extensions from previous research on home-school communication (LeBel, Chafouleas, Britner, & Simonsen, 2013). Increased accessibility to student data through asynchronous, electronic means may be a more convenient and preferable means for parents. The convenience of asynchronous electronic communication has been demonstrated to increase parental involvement (Thompson, Mazer, & Grady, 2015).

This aspect addresses a parent involvement gap in Tier 2 research identified by LeBel et al. (2013). The DPR-X model may also have a significant impact on total amount of data collected and disseminated, increasing the availability of and the accuracy of the DPR data being collected, which addresses a gap in the research identified by Simonsen, Myers, & Briere III (2010).

Research Question

The central question of this study concerns the most effective media for communication of DPR data with parents. The digital technologies available today have made electronic data collection and dissemination a possibility. Not only is an electronic version of the DPR a possibility, it has become a secure viable option through the use of GAFE. As outlined, parents have made their preference for electronic communication known in surveys and research studies. However, the following question remains and will be the focus of this research study.

RQ1: Is parental involvement effected differently for parents whose children use paper-based daily progress reports compared to parents whose children use electronic daily progress reports as measured by the Parental Academic Support Scale (PASS) survey?

Null Hypotheses

H₀1: There is no significant difference in communication scale scores between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

H₀2: There is no significant difference in Academic Performance subscale scores between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

H₀3: There is no significant difference in Classroom Behavior subscale scores between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

H₀4: There is no significant difference in Media Preference selection between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

Definitions

1. *Check-in/ Check-out (CICO)* - A type of behavior intervention plan advanced by Crone et al. (2010) in the book entitled, *Responding to problem behavior in schools: The behavior education program*. The check-in refers to the morning meeting that initiates the school day for the student. Similar to a homeroom, but with a more behavioral focus, students meet with the Check in / Check out (CICO) coordinator, are given their DPR and reminded about tips to make their daily point goal. The check-out process is similar; students meet with their coordinator at the close of the school day to review their daily points. If students meet or surpass the point goal, they are rewarded. If they fall short of the goal, they are reminded that tomorrow is another day and they are encouraged to try again then.

2. *Tier 2 Coordinator* - The point person with whom Tier 2 students check in and check out (Crone, Hawken, & Horner, 2010).

3. *Daily Progress Report (DPR)* - The daily progress report can take many forms. The DPR allows for student feedback, parent communication, and data collection for decision making. Students are rated across three behavior scales on which the teacher rates and provides feedback. The information is sent home to parents for review. The data is collected to identify

patterns and to inform decisions by school-level stakeholders. (Hawken & Horner, 2003; Yong & Cheney, 2013).

4. *Parental Role Construction*- Parental role construction refers to the parents' beliefs about their roles as parents and the degree of involvement they believe is appropriate at each stage of their child's development (Hoover-Dempsey & Sandler, 1997, p. 9).

5. *Parental Efficacy*- Parental Efficacy refers to the parents' perception that their action is helping their child's education (Hoover-Dempsey & Sandler, 1997).

6. *School Wide Positive Behavior Interventions and Supports (SWPBIS)*- A three-tiered intervention program, focused on improving behavioral outcomes for all students, that has proven to be effective in increasing positive behaviors while decreasing problem behaviors where administered with fidelity (Sugai, et al., 2011; Sugai & Simonsen, 2013).

7. *Parental Academic Support Scale*- A 16-item Likert scale survey instrument developed to measure the "communication of academic support between parents and teachers" (Mazer & Graham, Measurement in instructional communication research: A decade in review, 2015, p. 222).

8. *Media Richness Theory*- Rich media are able to communicate deep meaning in a way that is readily understood by all. Media Richness Theory proposes that the medium should match the ambiguity of the message so that easily understood or concrete quantitative data can be communicated effectively using a medium that is low on the richness scale. A message that is more abstract and nuanced would demand a media that is high on the richness scale, such as face-to-face communication (Daft, Lengel, & Trevino, 1987).

9. *Multi-Tiered Systems of Support*- a proactive framework for delivering academic and behavioral supports to students using data based decisions and evidence based practices.

Typically there are three tiers, a universal tier (Tier 1) used for all students, a secondary tier of more intensive supports (Tier 2), and a third higher tier (Tier 3) of supports for students who need the most individualized support (Cook, Lyon, Kubergovic, Wright, & Zhang, 2015).

10. *Academic Performance*- A subscale of the PASS survey, comprising questions 1-7, relating to parent communication about his child's performance in the classroom and the child's grades (Thompson, Mazer, & Grady, 2015).

11. *Classroom Behavior*- A subscale of the PASS survey, comprising questions 8-10, relating, to parent communication about the child's behavior in the classroom (Thompson, Mazer, & Grady, 2015).

12. *Preparation*- A subscale of the PASS survey, comprising questions 11-12, relating to parent communication about the child's academic or social preparedness for learning (Thompson, Mazer, & Grady, 2015).

13. *Hostile Peer Interactions*- A subscale of the PASS survey, comprising questions 13-14, relating to parent communication about behavior between students that is aggressive in nature (Thompson, Mazer, & Grady, 2015).

14. *Health*- A subscale of the PASS survey, comprising questions 15-16, relating to parent communication about medical issues that may need attention or impede performance (Thompson, Mazer, & Grady, 2015).

Chapter Summary

The goal of Chapter One was to provide the reader with the background relevant to this study. An historical context demonstrated that the research continues to show that parent and family involvement in children's education is an important factor in academic and behavioral

success. Concepts identified by Hoover-Dempsey and Sandler (1995, 1997) such as parental role construction and efficacy were reviewed. These factors were important to parents' understanding of their role and their beliefs about their effect on their children's educational outcomes. The work of Hoover-Dempsey and Sandler has led to Epstein's (1995, 2007, 2015) active research on home, school, and community partnerships. Epstein's research has extended the research to emphasize the importance of active family engagement in children's academic success.

A review of the societal context demonstrates that education is shaping and being shaped by the expansion of modern computer technology (Kong, et al., 2014; Thompson & Mazer, 2012 (Sung, Chang, & Liu, 2016; Gartner, Inc., 2015)). This has not only affected the pedagogical practices of teachers but has influenced the preferences of parents. Parents now more than ever desire and expect electronic communication between home and school. The ubiquitous nature of the internet and wireless devices perpetuates these expectations. Along with these expectations is an expectation that student data be accessible, secure, and kept private. The GAFE suite of productivity tools that offer accessibility, security, and privacy at a price that is cost effective for schools.

The theoretical framework known as Media Richness Theory is used as the basis for investigating parent teacher communication. The Parental Academic Support Scale (PASS) developed by Thompson and Mazer (2012) is based in MRT and adapted from social support research in order to ascertain the parental perspective toward parent-teacher communication. In recent studies, the PASS has shown that parents prefer email and text messages for updates on their child's academics and behavior. The PASS also shows which media is selected for the content that is being communicated. In the case of this study, the DPR used for students in the upper tiers of multi-tiered delivery systems provides the content or message. The two DPR types

under investigation are the paper daily progress report (DPR-SP) and the electronic daily progress report (DPR-X), which makes use of GAFE forms, sheets and sites for sharing DPR data in a way that is private, secure, and accessible from any connected mobile device (Google, 2015; Sung, Chang, & Liu, 2016; Gartner, Inc., 2015). In Chapter Two, an in-depth review of the literature will be conducted. This review will provide the theoretical and conceptual basis for this research study.

CHAPTER TWO: LITERATURE REVIEW

Introduction

This chapter will present an in-depth review of the literature used to theoretically and conceptually guide this study about home-school communication. A study of home-school communication within a K-12 educational context is by nature a study of form and content, involving both the message and the medium. The purpose of this quasi-experimental posttest only control group design study is to compare communication scores between parents whose children use paper daily progress reports and parents whose children use electronic daily progress reports (Campbell & Stanley, 1963; Gall, Gall, & Borg, 2007). The following research question drives this study: Is parental involvement effected differently by parents whose children use paper daily progress reports compared with parents whose children use electronic daily progress reports as measured by the PASS survey? For this study, *parental involvement* will be generally defined as communication practices specifically between parents and teachers. Parental involvement will be measured using the Thompson and Mazer (2012) Parental Academic Support Scale (PASS) comparing parent communication and preferences, with specific focus on the Academic Performance and Classroom Behavior subscales. Media Richness Theory (MRT) as defined by Daft and Lengel (1986) is the theoretical framework for this study and relates directly to parent-teacher communication media.

Search Procedures

The search for the most relevant research involved several types of literature. The types of literature reviewed include books, literature reviews, meta-analyses, and peer-reviewed research articles. Searches for the most recent peer reviewed studies were limited to a time frame within the last five years 2011-2015. A variety of computerized databases available through the

Liberty University Jerry Falwell Library were searched, including but not limited to: Education Resources Information Center (ERIC), ProQuest Education Journals, Education Research Complete, Academic Search Complete, ProQuest Dissertations, Google Scholar, and PsychINFO. The keywords used to direct each search included, but were not limited to, the following: multi-tiered support systems, tier 2, secondary tier interventions, behavior interventions, media richness theory, home-school communication, parent involvement, response to intervention, school wide positive behaviors interventions and supports (SWPBIS), scientific research based interventions (SRBI), parent role construction, daily progress report (DPR), Check-in Check-out (CICO), electronic communication, and google apps for education. Many of these references yielded relevant search results, and additional journal articles were acquired. A manual search for relevant literature at the University of St. Joseph Pope Pius XII educational library, West Hartford, Connecticut, as well as searches on Amazon.com, yielded several relevant theoretical books and textbooks. Following careful review of the most relevant meta-analyses, literature reviews, and journal articles, articles were selected and ancestral searches of the references of many documents were conducted to yield the most significant literary results.

Contemporary researchers whose names continuously appeared in the literature and who are currently conducting pertinent educational research were contacted via email. Dr. Blair Thompson from Western Kentucky University, whose research is centered on educational communication and who has developed the PASS, was contacted and has given permission for the PASS to be used in this study. Dr. Brandi Simonsen, from the University of Connecticut, who is a leader in SWPBIS research, was emailed and asked if she knew of any current studies involving SWPBIS and the use of electronic media such as tablets, phones, etc. for data collection and dissemination. Dr. Simonsen responded, stating that she had heard of districts

using technology to collect data, and to communicate with parents, but had not come across any studies examining the effects on parental involvement. Dr. Sandra Chafouleas from the University of Connecticut, co-creator of the Direct Behavior Ratings Single Item Scales (DBR-SIS), whose research appears in much of the current literature centered on behavioral intervention and assessment, was contacted and asked about any current studies on the DBR-SIS that evaluate the use electronic media such as tablets, phones, etc. for data collection and dissemination. Dr. Chafouleas stated that she was not aware of any published studies about the use of electronic media to collect and disseminate behavioral data. Dr. Chris Riley-Tillman, of the University of Missouri, is the co-creator of the Direct Behavior Ratings Single Item Scales (DBR-SIS). His research appears in much of the current literature centered on behavioral intervention and assessment. He was contacted and asked about any current studies on the DBR-SIS that use electronic media, such as tablets, phones, etc. for data collection and dissemination. Dr. Riley-Tillman was aware of the use of an electronic format but had not directly studied the approach using an electronic form of the DBR-SIS.

Chapter Organization

Generally speaking, the research literature selected fits within three overarching categories that will be used as an outline for this literature review. The review begins with a review of Media Richness Theory (MRT). MRT is the overarching theoretical framework for this study. Next, Multi-tiered Systems of Support (MTSS) are reviewed as related to the DPR. The conceptual framework under review is known as the Multi-tiered Systems of Support (MTSS) Framework (see Figure 3). The MTSS Framework provides a conceptual context for understanding the actual DPR data that comprise the content or message being communicated to parents of Tier 2 and 3 students. Finally, parental involvement is reviewed and related to 21st

century electronic collaboration and communication tools known as Google apps for education (GAFE). In essence, this review provides a synthesis of the literature that has grounded both the form and the content of this study up to this point, and establishes the importance of this study as contributing to the existing empirical knowledge base.

Review of Literature

Media Richness Theory

This section will provide a context for understanding MRT. The history of MRT as defined by Daft & Lengel (1986) will be reviewed along with current research that demonstrates certain limitations of MRT. This will be followed by a review of MRT research in the 21st century and the connections to home-school communication. Finally, the development of the PASS instrument by Thompson and Mazer (2012), based on MRT, will be reviewed.

MRT (as shown in Figure 1) provides a framework for understanding communication forms, also known as media. MRT involves the concepts of “lean” versus “rich” media. The terms “lean” and “rich” are qualifiers describing various forms or types of communication ranging from “lean”(general numeric data) to “rich”(face-to-face conversations) (Daft & Lengel, 1986, p.560). In the following diagram, MRT is shown in its relationship to home-school communication.

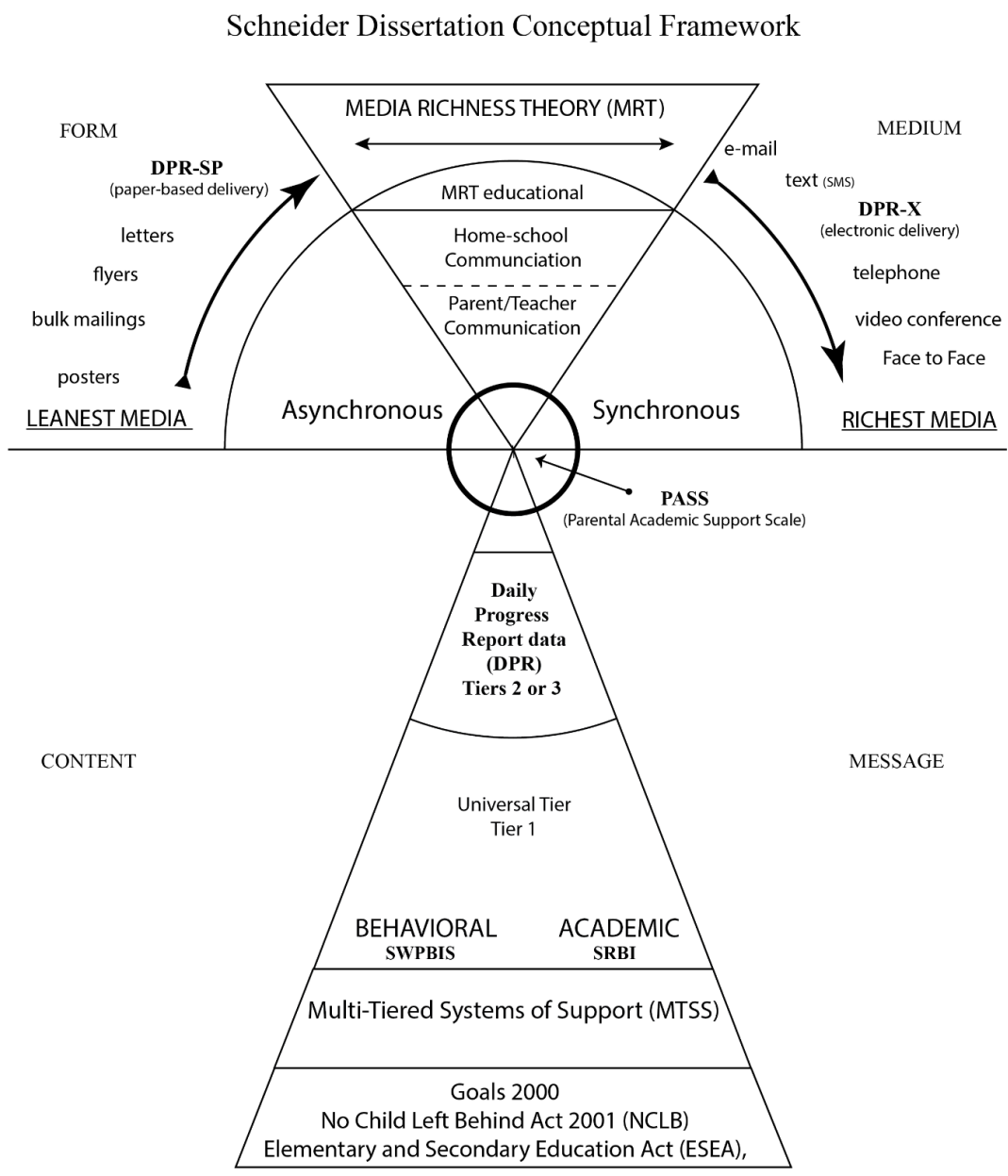


Figure 1. Schneider Dissertation Conceptual Framework. Graphic designed by Jonathan Schneider adapted from theoretical and conceptual works of (Daft & Lengel, Organizational information requirements, media richness and structural design, 1986; Thompson & Mazer, Development of the parental academic support scale: Frequency, importance, and modes of communication, 2012)

Media Richness Theory (MRT) provides a theoretical framework for understanding how various communication media are able to accurately convey intended meaning (Daft & Lengel, 1986). In this section a historic survey of MRT will be completed with the intention of providing an overall framework for understanding this study that compares two different communications media, namely paper-based and electronic media and their effect on parent involvement. This will be followed by a description of the basis and development of the PASS to measure parental involvement and the selection of specific communication media used for parent-teacher communication. Finally, Media Richness Theory as applied to an educational context will be reviewed in connection with home-school communication in electronic media.

The late 20th century work of Daft and Lengel (1984, 1986, 1989) based on Information Processing Theory has resulted in what is known as MRT. MRT was used to evaluate the effectiveness of various communications mediums within certain organizations. In the 1980's, modes of communication were emerging that would eventually reshape communication as it is in the 21st century (Thompson, Mazer, & Grady, 2015). According to Daft and Lengel (1986), the goal of effective communication is the reduction of uncertainty and equivocality so that the message can be interpreted clearly by its intended recipient.

Daft, Lengel, and Trevino (1987) explained the concept of uncertainty in communication as information that is missing or absent. There exists an inverse relationship between information and uncertainty; as one increases the other decreases. Typical ways organizations increase the amount of information and thus decrease uncertainty are reports, data analysis and information queries. These methods enhance communication by providing answers and clarity where they may be missing.

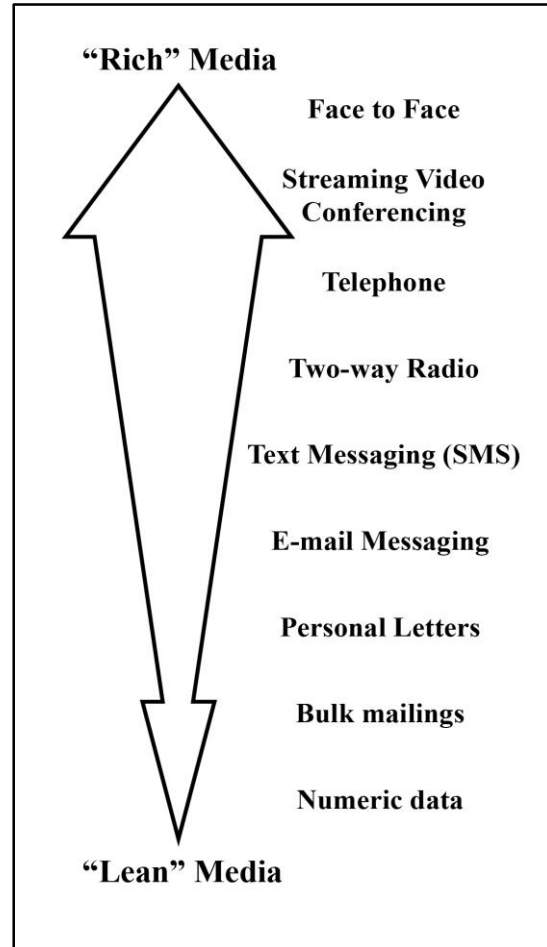


Figure 2. Media richness illustration adapted from Daft & Lengel (1986); Thompson, Mazer, and Grady (2015).

A second factor in organizational information processing is the concept of equivocality or ambiguity of the message (Daft and Lengel, 1986). If a message may be interpreted more than one way, the result is confusion, uncertainty, and misunderstanding. When the context and perspective of each recipient is different, they recipients may interpret the same message very differently from one another. Messages that are emotional and subjective are often misinterpreted due to the concept of equivocality. For instance, the statements “nice job,” or “great idea,” which are sometimes used sarcastically, can be ambiguous when delivered via leaner media. A common point of reference or objective source of meaning may be established to

offset equivocality and bring clarity. Situations that are equivocal therefore necessitate discussion and further attempts toward mutual understanding of messages.

Daft, Lengel, and Trevino (1987) point out that the “new media” (p.356) such as electronic messages, video and teleconferencing were once expected to reduce equivocality. However, these new electronic forms of media are facing problems similar to those of traditional mediums. Equivocality has not been completely resolved with electronic media; however, some mediums, such as teleconferencing, are better-suited to reducing equivocality than others. For instance, teleconferencing provides users with synchronous communication, increasing the possibility of immediate feedback and clarification.

Daft et al. (1987) define media richness as a medium’s ability to communicate effectively. Methods of communication that are able to rapidly and clearly clarify understanding are considered rich media. These rich forms of media are more synchronous and may provide additional information such as tone of voice or body language to help clarify meaning. Alternatively, communications that require more time to convey information and are more ambiguous are considered lean media. These leaner forms of media are more asynchronous, and may be more generalized, leaving room for uncertainty or equivocality.

Lengel and Daft (1989) further point out that the medium used to communicate has an effect on the message being communicated. Decisions based upon use of less rich media will often be different from those based upon data provided through richer means. In the 1980s Lengel and Daft theorized a scale of media richness that graduated from low to high. The highest level of media richness attained would be a physical face-to-face medium of interaction. The next lower level of media richness was telephone, followed by personal letters and memos, followed by impersonal written communication. The middle ranges between low and high

richness involve personalized letters and individualized reports, up through interactive mediums such as live telephone conversations or other electronic media. The lowest level of media richness, considered lean media, would be plain numeric data delivered using impersonal communication (Lengel & Daft, 1989).

MRT is not without its challenges and limitations (Badger, Kaminsky, & Behrend, 2014; Dennis & Valacich, 1999). A competing theory of media synchronicity, proposed by Dennis and Valacich (1999), challenges MRT's categories of equivocality and uncertainty and refocuses on the processes of "conveyance and convergence" (p.1). They argue that face-to-face interactions may not always be the richest way to communicate, since every situation is unique. They have proposed the following five dimensions that are important to each situation in deciding which medium would be the richest or most effective: (a) Immediacy of feedback, (b) symbol variety (verbal and non-verbal), (c) *parallelism* (the ability of the medium to allow simultaneous conversations), (d) *rehearsability* (the amount of adjustment allowed the response prior to sending), and (d) *reprocessability*, (which allows both the message and the response to be considered multiple times before sending).

Dennis and Valacich (1999) concluded that since every situation is unique, the context and capabilities of a medium should be considered when selecting the richest or best medium. When communication is viewed through the lens of these proposed five dimensions, the richest medium becomes dependent upon the situation. For instance, face-to-face interaction, which, according to MRT, is always richest, does not allow as much rehearsability or reprocessability due to its immediate nature. The capacities of email are different, depending on the configuration and capabilities of the system being used. For instance, an email may include graphics and video that enhance its capability to communicate, but the accessibility of the video may be dependent

on a faster internet connection. In each situation, matching the medium to the context of both the sender and the receiver of the message is essential to determine the best or richest medium (Dennis & Valacich, 1999).

Badger, Kaminsky, and Behrend (2014) examined MRT in relation to recruitment websites that were very rich (such as virtual worlds) and very lean (such as typical websites) in an effort to ascertain the amount of information acquired. MRT was tested against extraneous cognitive load theory demonstrating that tasks requiring more mental work actually stifle the ability to remember. Badger et al. (2014) found that rich websites such as virtual worlds contained features that may have distracted from the core information, and that more information was retained by individuals using the typical websites than users of the richer media virtual world websites. These findings do not support MRT categories of media richness as a predictor of information acquisition (Badger, Kaminsky, & Behrend, 2014).

Among the researchers that affirm the basic tenets of MRT and find it useful are those currently working in the educational communications field (Thompson B., 2008; Thompson, Mazer, & Grady, 2015; Thompson & Mazer, 2012). The field of educational communication is exploring new electronic means of communication with parents and families in relationship to MRT. Research demonstrates that parents differ as to their preferences and patterns regarding how to communicate, how often to communicate, and by what means the communication should take place (Thompson, Mazer, & Grady, 2015). Media Richness Theory is currently being used to investigate communication patterns between the home and the school. According to the National Center for Educational Statistics (NCES) Parent and Family Involvement Education Survey (2012), 75% of American families use the internet. Of the individuals using the internet in their homes, 99% report being able to use the internet from home using high speed

connections such as digital subscriber line (DSL) as opposed to dial-up service. These numbers demonstrate that the majority of individuals in the United States not only have access to the internet, but have in-home, high-speed access. One implication for educators is that now more parents than ever have access to the electronic technology needed for transmitting and receiving information and communication. Advances in technology making use of electronic media using Computer Mediated Communication (CMC) continue to expand exponentially the use of electronic means of communication, especially email (Thompson B., 2008). Having access anywhere, anytime, coincides with findings of the National School Public Relations Association (2011) parent survey. The survey found that parents prefer electronic delivery of school-based communications from school personnel.

The majority of parents in the United States have internet access (National Center for Education Statistics, 2015). In the 21st century, parents prefer electronic communications for important information regarding their children (National School Public Relations Association, 2011). For instance, a recent medical study by Saidinejad, Teach, and Chamberlain (2012) found that patients in an urban emergency room reported high levels of connectivity and internet use on computers and mobile devices. Of the sample population, 93.1% expressed interest in receiving information about their child's health care through electronic means. Of the sample, 41.7% expressed a preference for paper-based communication in addition to electronic communication. Of the sample, 50.9% preferred only electronic communication. This same study dug deeper and found that when asked about preferred electronic communication regarding the health care of their child, 81.9% preferred email, while 14.3% preferred text messages (Saidinejad, Teach, & Chamberlain, 2012). These findings are consistent with research by Thompson et al. (2015). As communication technologies offer new and different means of communication, the ways parents

and teachers communicate will also change. While the means of communication changes, the importance of home school communication for enhancing student performance does not change.

According to a Pew Research Center (2015) survey, smartphones are owned by two thirds of all Americans. Sixty-four percent of adults in America now own smartphones. This represents an increase from 35% in 2011. Of all smartphone owners, 19% rely on their smartphones for access to online content, and for 7% percent of smartphone owners, the smartphone is their only means of access to the internet. This smartphone technology allows for unprecedented convenience in communication, allowing people to interact from wherever they want, whenever they want, provided, of course, that they have a wireless or other type of data connection to the internet. Thompson, Mazer, and Grady (2015) have shown that the ubiquity of smartphones positively correlates to the preferred selection of communication media such as e-mail and text messages between parents and teachers for a variety of message content. This preference for leaner media influences parental involvement and parent teacher communication as measured by the Parental Academic Support Scale (PASS) developed by Thompson and Mazer (2012).

According to MRT, written communication in paper-based mediums such as written or typed letters, and electronic mediums such as e-mail, are closely related mediums on the media richness scale. However, modern educational communication researchers Thompson, Mazer, and Grady (2015) have shown that, increasingly, parents prefer email and digital communication over other mediums used to communicate with teachers about specific topics. For example, the researchers found that parents preferred text messaging for uncomplicated messages; however, parents preferred phone or face-to-face communication for more important or complex messages.

Thompson, Mazer, and Grady (2015) have extended the research on MRT into the educational realm. They have used MRT to examine parent selection of media when communicating with their children's teachers. Consistent with earlier findings, Thompson et al. (2015) found that parents preferred richer media to communicate with teachers about unusual occurrences or situations which required communication that was more nuanced and needed additional cues, such as body language or tone of voice. When communicating information about normal, routine situations, leaner, asynchronous media (specifically, text messages and emails) were preferred by parents.

Findings by Thompson et al. (2015) regarding media selection show changes in parent preference even within the past three years, as widespread use smartphones have made leaner modes of communication more prevalent. Parental preference for e-mail over other means of communication increased from 2:1 in their 2012 study to 5:1 in their 2015 study. The convenience and mobility allowed by today's mobile technology has been verified by Ho, Hung, and Chen (2013) in their study of parent-teacher communication which finds that e-communication is replacing the paper-based communication traditionally used for home-school communication.

Home-School Communication

One of the central components of any Tier 2 intervention is parent communication (Swoszowski, 2014). Filter et al. (2007) have shown that Tier 2 interventions have typically low levels of parent involvement. Increasing parental involvement has been shown to improve academic and behavioral outcomes for students (Bower & Griffin, 2011). In the 21st century the means of home-school communication are multiple (Data Quality Campaign, 2015; Guidera, 2015; Kosaretskii & Chernyshova, 2013; Thompson & Mazer, 2012; Thompson, Mazer, &

Grady, 2015). According to Thompson et al. (2015) parent-teacher communication modes continue to maintain pace with the most current technologies, including smartphones. In fact, computer-mediated communication (CMC) has helped to change the means parents and teachers use to communicate (Seitsinger, Felner, Brand, & Burns, 2008).

Media richness, as related to home-school communication, has been the topic of recent educational communication studies. Traditional means of communication consisted of scheduled parent conferences and teacher telephone calls home to communicate problematic behaviors needing further attention (Epstein, 2007). Recent studies show that CMC is becoming more prevalent. In his study of email communication, Thompson (2008) provided a balanced perspective on the usefulness of CMC. In the case of e-mail, there are issues that should be recognized, such as the role of subject matter on media selection. In his qualitative analysis, Thompson (2008) found that grades and behavior were most frequently discussed within emails, with grades being the subject of 57.18% of the emails collected; behavior is the subject of only 7.04 % of the email conversations. This low frequency of behavior discussion was explained in the interviews with parents and teachers as being due to the “difficulty associated with communicating about behavioral issues via email” (p.209).

Given the nature of behavioral concerns and the emotional effects on both parents and teachers, more synchronous forms of communication, such as oral communication (in person or over the phone) were generally preferred over e-mail. However, when the parents of students with problematic behaviors were interviewed, many of them preferred the more objective email communication; when parents and teachers had time to think about their responses and write them in email communication they tended to be less emotional and more objective (Thompson, 2008).

In the qualitative part of their study, Thompson et al. (2015) found parents preferred text messages and emails over other modes of communication. In this study, reasons cited for this preference were electronic messaging's (a) speed and convenience, (b) asynchronous nature, and (c) ease of use. Another finding was that the widespread ownership of smartphones makes e-mail and text messaging accessible throughout the day. When the issues to be discussed were more complex or serious in nature, the parents preferred either face-to-face meeting or phone communication. When parents and teachers needed to work through a problem, they preferred these richer media. In a previous study, Thompson and Mazer (2012) had found that parents preferred email communication overall twice as much as other media. This study by Thompson, Mazer, and Grady (2015) only three years later shows an increase in email preference by parents up to five times more than other media.

Academic performance and classroom behavior are top concerns for parents (Guidera, 2015; National School Public Relations Association, 2011). Parents consistently want to know how to help their child get better grades, and how their child is behaving and getting along socially. Parents in the Thompson & Mazer (2012) study (N = 175) were asked to identify which concerns they had contacted teachers about in the previous month. Based on the frequency with which parents contacted teachers about the topics in question, parents in this study were most concerned with grades. In other word, the most frequent communications have been discussions of their child's grades. They rated the first PASS item (*my child's grades in the class*) (M = 2.68; SD = .58) as most important, followed by item three (*how my child can improve his/her grade*)(M = 2.66; SD = .59). The third- most important item was item five (*why my child was not completing assignments*) (M = 2.63; SD = .67), and fourth- ranked in level of importance was PASS item eight (*solutions to address my child's behavior in class*) (M = 2.56; SD = .77).

Finally, the fifth- most important item ($M = 2.53$; $SD = .79$) was item nine, (*my child talking back to the teacher*) (Thompson & Mazer, 2012).

In the Thompson et al. (2015) study ($N = 1,349$) of parents, academic performance again was paramount; parents identified the first item, (*my child's grades in the class*) first in order of importance ($M = 2.56$; $SD = .63$), followed by item three (*how my child can improve his/her grade*) ($M = 2.54$; $SD = .63$). The third most important, according to this study, was item 14, concerning major behavior problems ($M = 2.53$; $SD = .75$). Fourth in importance to parents, as gauged by frequency of response, was PASS item nine (*my child talking back to the teacher*) ($M = 2.53$; $SD = .77$). Finally, the fifth- most selected item ($M = 2.52$; $SD = .72$) concerned the child's behavior in class (Thompson, Mazer, & Grady, 2015).

The current study is focused on students who struggle both academically and behaviorally and are therefore receiving Tier 2 or 3 interventions. The findings of current research studies suggest the possibility that parent involvement may vary significantly, based on the medium of communication used. Since the DPRs address a complex topic—behavior-- the findings of the Thompson et al. (2015) study would suggest that parents may desire face-to-face or phone conversations to bring further clarity to the DPR data, be they paper-based or electronic. This incentive to initiate contact with the child's teacher may influence both communication scores and preferred medium selections as measured by the PASS.

Development of the PASS. Parent involvement research led to the establishment of a connection between parental involvement and favorable educational outcomes (Epstein J. L., 1995; Hoover-Dempsey & Sandler, 1995, 1997). This research led to government incentives and national policies (ESEA, Goals 2000, and NCLB, etc.) to encourage parent and family partnerships and to increase parent involvement. These measures increased the focus of

researchers to develop scales of measurement to assess and evaluate the various programs that resulted from these policies. According to Thompson and Mazer (2012), one area of research that has seen growth in relation to parental involvement and communication is the area of social support. Social support was defined by Cobb (1976) as “information leading the subject to believe that he is cared for and loved, esteemed and a member of a network of mutual obligations” (p. 300). Social support has at least two aspects, perceived social support and actual social support (Cutrona, 1989).

Social support research has developed categories that have informed the work of educational researchers in their development of academic support research. This social support research has resulted in social support scales. These scales are useful to understand the perspective of the receiver of the support and his perceptions related to the social support. However, in order to gain the perspective of the provider of the social support, in this case parents, researchers needed to develop a more specific scale to measure parental academic support. This was the impetus for the development of the PASS (Thompson & Mazer, 2012).

According to Thompson and Mazer (2012), the PASS was developed to ascertain the communication practices and preferences of the parent, the provider of the academic support, rather than those of the student or the teacher, for at least three reasons. (1) First, students may not always be privy to what parents and teachers discuss in their communication. (2) Secondly, teachers offer a limited view of parent support since they might only speak with parents at designated times or events, such as parent conferences, and, during the child’s middle or high school years, specific teachers usually see the child one time per day or less often. (3) Finally, when parents are the initiators of contact with teachers they can provide information on the purpose of email or other electronic communications. The PASS was uniquely designed to focus

attention on student academic support provided by the parent rather than student support coming from a variety of providers, such as classmates and teachers.

The PASS requests two responses from parents for each of the 16 items. The first response has to do with how often communication is taking place with the child's teacher. This is referred to within this study as *PASS - communication score*. The second response requested for each of the 16 PASS items is the parent's preferred medium of communication. This is referred to within this study as *PASS – media preference*. This is designed to ascertain parents' preferred medium of parent- teacher communication, such as written notes, e-mail, text messages, telephone, or face to face meeting, with teachers. MRT provides the theoretical framework to understand and interpret parent communication practices and media preferences for parent-teacher communication.

To paraphrase Daft and Lengel (1986), in order to communicate effectively, the message must be sent and received accurately and without ambiguity. Different media have different capacities built into them. The richness of a medium is determined by four factors: 1. The medium allows for immediate feedback. 2. The medium allows for social and contextual cues such as body language and tone of voice. 3. The language allows for a broad range of topics. 4. The medium allows for focus on a selected topic (Daft & Lengel, 1986). Richer media have all of these attributes; leaner media contain fewer of these attributes (see Figure 2).

The following research and development process was used by Thompson and Mazer (2012) to develop the PASS. The first study was based on Thompson's previous findings (2008) about parent-teacher communication topics. This study provided 35 communication topics frequently referenced by parents and teachers in their communication, organized into four categories: (a) academic performance, (b) classroom behavior, (c) child welfare, and (d)

scheduling meetings. This preliminary study focused on the quantity of e-mail communication between parents and teachers and was given to 191 parents of middle and high school students. Parents were asked to review the 35 items and share the number of times within the past month that they had communicated with their child's teacher about these topics. Using factor analysis, the e-mail frequency was reduced to the 16 most substantive items within five governing factors: academic performance, classroom behavior, preparation, hostile peer interactions, and health. In a second study, Thompson and Mazer (2012) delivered the newly revised 16-item PASS to 175 parents of students from grades K-12; Confirmatory factor analysis confirmed the model fit for the 16 items.

In summary, the PASS provides researchers with an instrument to evaluate parent communication practices and preferred mediums for communication with their child's teachers. These communication practices and preferences are identified in relation to a range of parental academic support topics. Additionally, social support and media richness theory research has been extended, providing researchers and educational stakeholders with a tool to evaluate parent-teacher communication in terms of both medium and message. In this section, selected research on MRT was reviewed beginning with the development by Daft and Lengel (1986). Certain limitations were reviewed such as the findings of Dennis and Valacich (1999), who propose a theory of media synchronicity in which the best fit, or richest media, depends on the particular situation. To identify face-to-face communication as the absolute richest media at all times does not account for certain variables such as rehearsibility and reprocessibility. Badger et al. (2014) identify limitations with MRT due to cognitive load; richer media, as defined by

Daft and Lengel (1986), when applied to virtual world websites may limit the amount of information that is retained by the viewer due to the substantial amount of working memory required of him.

The current work within the realm of educational communication by Thompson et al. (2015) was reviewed. The research shows a shift in parental preference toward digital or electronic means of communication for conveying certain types of information to teachers. The universality and convenience of mobile communication devices such as smartphones has made asynchronous, leaner forms of communication, preferable for many parents. The PASS - communication and PASS – media preference development were reviewed. The survey was based on MRT and designed to help researchers understand parental academic support in terms of communication practices and preferences. The PASS is the selected instrument for this study to better understand communication practices and preferences of parents with children in upper tiers of the MTSS framework using a DPR.

Multi-Tiered Systems of Support

The following section will review the current literature on Multi-Tiered Systems of Support (MTSS) with specific focus on the use of the daily progress report as a data collection tool for progress monitoring. The DPR will be discussed within the larger conceptual framework of multi-tiered systems of support (MTSS). The concept of MTSS is an attempt to provide all students with the supports they need to achieve at high levels (Cook, Lyon, Kubergovic, Wright, & Zhang, 2015; Witzel & Clarke, 2015; Lane, Oakes, & Menzies, 2014). Although MTSS is a universal model, in this review specific emphasis is placed on the more intensive Tiers 2 and 3. An historic review will trace MTSS from its beginnings in the 1990's through legislative adoption and its current implementation.

According to Harlacher, Sakelaris, and Kattelman (2014) Multi-tiered systems of support (MTSS) refers to leveled (tiered) models of educational service delivery that are systemized and implemented within an educational context; each of three tiers represent levels of evidence-based strategies and interventions, their intensity increasing as the tier level increases, for students (see Figure 3). According to Sugai & Horner (2006), MTSS is grounded in the pioneering work of educational researchers during the 1990's.

Multi-Tiered Systems of Support

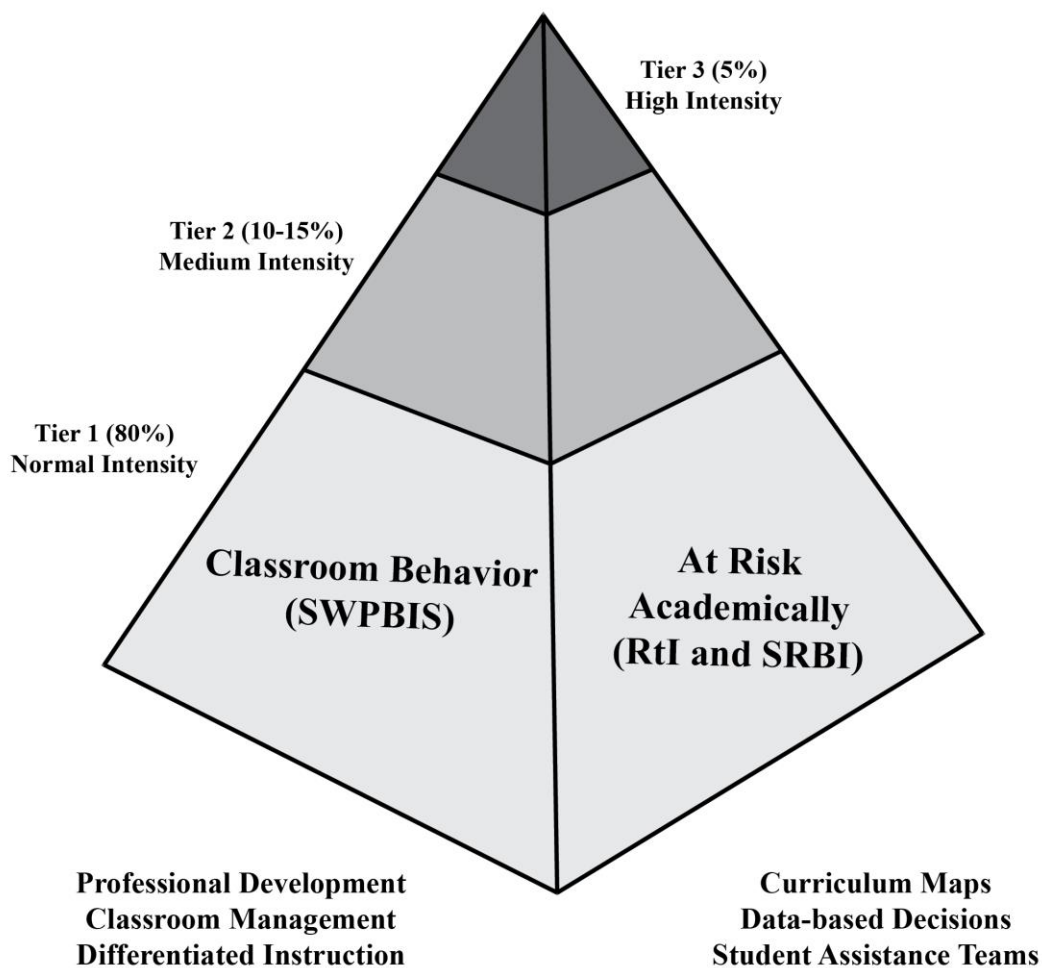


Figure 3. Multi-tiered systems of support conceptual framework with various tiered levels for various types of learners. Adapted from work by Dulaney, Hallam, & Wall (2013).

Research demonstrates that the universal level, Tier 1, will satisfy the needs of approximately 80% of the students in a typical school (Crone, Hawken, & Horner, 2010; Sugai & Simonsen, 2013). Secondary, Tier 2, interventions are more intensive and are typically needed

by 10% to 15% of the student population. Tier 3 supports represent the most intense levels of supports for the neediest students, who account for about 5% of the typical school population (Sugai & Horner, 2006; Sugai & Simonsen, 2012; 2013). While these percentages are averages, every school is different and will differ from year to year with each new population. These models have a variety of different names and purposes. For the purpose of this research, the two types of MTSS models being implemented are SWPBIS and Scientific Research Based Interventions (SRBI), Connecticut's own version of RTI.

Hayes and Lillenstein (2015) explain that MTSS is really intended to support students with what they need to meet today's rigorous educational standards. According to Cook, Lyon, Kubergovic, Wright, and Zhang (2015) the nature of MTSS is one that results in school improvement practices that are comprehensive. Cook et al. (2015) refer to essential "concepts of MTSS: (1) multiple tiers of support, (2) evidence-based practices, (3) universal screening, (4) progress monitoring, (5) data-driven decision making, (6) fidelity of implementation, and (7) problem-solving teaming" (p. 53). Cook et al. (2015) demonstrate that these practices make up the content of MTSS but are not the only contributing factors to the successful implementation of MTSS. Factors such as teacher beliefs and attitudes are positively correlated with implementation fidelity. If stakeholders believe that these MTSS practices will work, they will behave accordingly. This finding supports the importance of meaningful and persuasive professional development to help ensure implementation fidelity.

When MTSS is faithfully implemented, several implications follow (Cook et al., 2015). Measuring is a daily, ongoing process. The measures are common and are used for continuous monitoring of the students and the school. Evaluation of implementation is monitored and analyzed along with an evaluation of the outcomes. These evaluations are grounded in data and

result in the ability to ground data-based decision making to meet the needs of all students. MTSS thrives within a professional learning community framework in which dynamic and collaborative problem-solving is made possible by the formation of diverse groups of stakeholders, with various levels of expertise and a multitude of perspectives, to solve real practical problems (Hayes & Lillenstein, 2015).

Harlacher et al. (2014) define MTSS as “multi-tiered model of service delivery in which all students are provided an appropriate level of academic and behavioral support based on their needs and skill levels” (p.23). There are six foundational assumptions for MTSS that guide its fidelity and its success. The first premise is that: 1. All students can learn grade level content and meet expectations if they are given the type of support and the level of support matched to their individual needs. 2. Educational approaches should be positive as well as preventative. 3. Educational interventions and practices are to be based in research and evidence. 4. Data is to be collected and used to make decisions. 5. There must be a good fit between the support given and the support that is actually needed. 6. Finally, the MTSS approach should be universal, schoolwide and collaborative (Harlacher, Sakellaris, & Kattelman, 2014; Hayes & Lillenstein, 2015; Cook, Lyon, Kubergovic, Wright, & Zhang, 2015).

Research demonstrates the ability of MTSS to impact student academic and behavioral outcomes (Hawken & Horner, 2003; Sugai & Simonsen, 2012). Explicit instruction with regard to academic and behavioral expectations is central to an MTSS framework, and can help to close the achievement gap for students with emotional and behavioral disorders. The statistics pertaining to these students show that they have low grade point averages. They also have high rates of absenteeism. More than half of them drop out of school. Due to its clear and unambiguous approach to teaching, using explicit methods of instruction have been shown to

improve academic outcomes (Benner, Nelson, Ralston, & Mooney, 2010; Benner, Nelson, Stage, & Ralston, 2011; Benner, Kutash, Nelson, & Fisher, 2013; Benner, Sanders, Nelson, & Ralston, 2013).

The research on multi-tiered interventions has been promising in delivering evidence-based interventions to give each student the supports needed to succeed. The multi-tiered intervention program used to ensure academic supports are in place for all students is known as Response to Intervention (RTI) (Pool, Carter, & Johnson, 2012). The multi-tiered intervention program that has shown great promise for shaping and maintaining prosocial behaviors while diminishing problem behaviors is known as School Wide Positive Behaviors Interventions and Supports (SWPBIS) (Sugai & Simonsen, 2012, 2013).

RTI, as defined in the work of Pool, Carter, and Johnson (2012) is a systematic intervention by which student data is used to both monitor and modify academic instruction and support for each student. The general population of students is given certain curriculum, instruction, and assessment. For those students who are still not meeting academic and behavioral expectations, Tier 2 interventions are implemented, the process being facilitated by the use of a DPR to monitor daily progress. Tier 3 students are those students identified as being in need of Special Education services and are given the highest levels of academic interventions and supports (Crone, Hawken, & Horner, 2010; Pool, Carter, & Johnson, 2012).

SWPBIS as defined by Sugai and Horner (2006) is a systematic behavioral approach to encouraging positive outcomes for student behaviors across multiple, graduated tiers of intervention levels. Each tier emphasizes evidence-based interventions for preventing as well as reshaping and correcting problem behaviors. Tier 3 involves the use of intense levels of support

including but not limited to the use of behavior interventionists and special educators (Sugai & Horner, 2006; Sugai & Simonsen, 2013).

According to Crone, et al., (2010) Tier 2 level supports are needed by approximately 15% of all students, whom do not respond to the universal Tier 1 supports and incentives. These supports are designed to be less costly than Tier 3 supports, but provide a more intense level of incentives and supports than Tier 1. While there are no universal rules for identifying students for Tier 2 supports, the student assistance team (SAT) makes leveling decisions for each student. The SAT is made up of teachers, administrators and other stakeholders who review and make recommendations based on resources, levels of need, (Campbell & Anderson, 2007; McIntosh, Campbell, Russell-Carter, & Dickey, 2009), and frequency of Office Disciplinary Referrals (ODRs) (Sugai, Sprague, Horner, & Walker, 2000; McIntosh, Frank, & Spaulding, 2010).

Tier 2 interventions are designed to be more individualized approaches to helping students who do not respond well to the universal supports and continue to display problem behaviors (Simonsen, Sugai, & Negron, 2008). According to Stormont et al. (2012), there is much research that has been completed on Tier 1 and Tier 3, but not as much research has been completed on Tier 2. The importance of researching and developing secondary Tier interventions is that Tier 2 interventions may offer schools fiscally responsible, evidence- based practices to help students who are not responding well to the universal Tier practices (Stormont, Reinke, Herman, & Lembke, 2012).

Tier 3 interventions are designed for individual students with more challenging academic or behavior problems. The interventions are costly due to the human resources needed to accommodate them. These tertiary-tiered interventions may include paraprofessional supports, self-contained classrooms, and in certain circumstances, other special education supports.

According to Stormont, Reinke, Herman, and Lembke (2012), in most public middle school populations, approximately 5% of students in a school will need these high-level supports. In order to mitigate the financial burden of these Tier 3 interventions, a middle-level tier of supports, known as Tier 2, is currently being researched and developed.

A critical feature of the upper tiers within a MTSS framework is an efficient technology-based system for monitoring progress and effectively connecting students to research-based practices (Simonsen, Myers, & Briere III, 2010; Sugai & Simonsen, 2012, 2013). One-way data is collected in these upper tiers is by using a DPR to collect and report data regarding a child's behavior in each of his classes on a daily basis. This data is then used to provide specific feedback, rewards, and incentives to the child (Crone, et al., 2010; Vannest, Davis, Davis, Mason, & Burke, 2010). These DPRs are essential in tracking the students' progress as well as identifying problematic behavior patterns. Consistent, efficient, and accurate data collection and access to the data are necessary to provide students with timely, accurate feedback and incentives to reinforce positive outcomes (Fabiano et al., 2010; Sugai & Simonsen, 2012; Lane, Oakes, & Menzies, 2014).

The message: Tier 2 interventions and DPRs. There are a variety of research based interventions for Tier 2 students that make use of a DPR. Check-in Check-out (CICO) is one of the most successful and prominent programs for Tier 2 students. Tier 2 students are assigned to a coordinator such as a teacher, counselor, or even a paraprofessional who checks them in each morning before school. The coordinator provides each student with a paper-based DPR and sets individual point goals for the day. The student is supposed to carry the DPR to each class, ask the teacher to fill it out and sign it at the end of class, and then bring it to check-out at the end of the school day. The DPR points are calculated by the coordinator, and the DPR is sent home for

parents to review. If the daily point goal is met, the student may earn reinforcements issued by the CICO coordinator.

The DPR is the central monitoring component of Tier 2 interventions (McDaniel, Houchins, & Robinson, 2016). Evaluations are made based on the feedback a student receives on a daily basis. This data is then reviewed by students, parents, teachers, and administrators in order to identify and document behavior patterns (Crone, Hawken, & Horner, 2010; Filter, et al., 2007; Hunter, Chenier, & Gresham, 2014; Simonsen, Myers, & Briere III, 2010).

Progress monitoring and home-school communication using a DPR has been used as an effective way of reducing disruptive behavior in school (Crone, Hawken, & Horner, 2010; Simonsen, Myers, & Briere III, 2010; LeBel, Chafouleas, Britner, & Simonsen, 2013.). DPRs are designed to be quick, effective ways to monitor the progress of students, to provide them with feedback on their performance, and to set daily goals for reinforcement (Crone, Hawken, & Horner, 2010; Hunter, Chenier, & Gresham, 2014). The DPR is typically paper-based and carried by the student for data collection throughout the day from class to class. DPRs have been used historically in a variety of formats including but not limited to the *Daily Behavior Report Card* (Vannest, Burke, Payne, Davis, & Soares, 2011), the *electronic daily behavioral report card* (Burke & Vannest, 2008), *Home-school Notes* (Blechman, Taylor, & Schrader, 1981), *Daily Report Cards* (Dougherty & Dougherty, 1977), and the *Direct Behavior Ratings* (Chafouleas, Kilgus, & Maggin, 2012). The DPR is analogous to the Direct Behavior Ratings Single Item Scales (DBR-SIS) in that it presents a simplified scale that allows teachers to rate students on three to five Likert-type scales (see Appendix D) at the end of each class period (Chafouleas, Jaffery, Riley-Tillman, Christ, & Sen, 2013; Chafouleas, Kilgus, & Maggin, 2012; Christ, Riley-Tillman, Chafouleas, & Jaffery, 2011).

In each classroom, students are rated by each teacher using a single scale for variables such as academic engagement, respectful behavior, and disruptive behavior (Crone, Hawken, & Horner, 2010). Teachers score the student each class period based on the level of each behavior that was observed (Chafouleas et al. 2013; Chafouleas, et al., 2012; Christ et al. 2011). Scales range from zero (meaning the behavior is never observed by the teacher) up to five, indicating that the behavior is always observed (see Appendix B for examples). Each DPR is designed for the individual student using rating scale categories which are aligned with core school values or with the student's individual Behavior Intervention Plan (BIP) in order to provide the most relevant and meaningful data. Although the most common DPRs come on a single sheet of paper, there have been some attempts to translate the DPR to a digital format.

Burke and Vannest (2008) have created a web-based system for behavioral progress-monitoring as an important next step in behavioral research. The system is called the Electronic Daily Behavioral Report Card (e-DBRC). The e-DBRC allows for quick delivery of feedback to stakeholders such as teachers, students, and parents. It can be used as its own intervention or used in tandem with another Tier 2 intervention. In most ways, the e-DBRC is similar to the aforementioned DPR variations with one unique difference: the scaling. The scales used on the e-DBRC are goal-attainment scales similar to those used by Kiresuk and Sherman (1968). These types of scales are centered on a score of zero (0). To the right of the zero the scale moves in a positive direction up to the value two (2). Likewise, to the left of the zero the scale moves in a negative direction down to the value negative two (-2). Positive values are associated with better than expected individual progress toward the goal, while negative values are associated with less than expected progress toward the goal.

Burke and Vannest (2008) identified several problems with the e-DBRC that need to be further researched. 1. With regard to technical adequacy, the goal-attainment scaling model needs to be validated. 2. With regard to contextual fit and social validity, the e-DBRC is able to graph the cumulative data in a format that may or may not be understandable by all stakeholders. While there are clear advantages to having access to trend data, the readability by students and parents may be problematic. 3. The role of the e-DBRC is not clear. There are various roles in which the e-DBRC could be used, including behavior monitoring of response to interventions; screening purposes; a pre-referral intervention process for special education, etc. 4. The scaling approach with specific indicators could be used to help bring clarity to more abstract goals identified in a student's Individualized Education Program (IEP). 5. The role of the e-DBRC as a component of a Tier 2 intervention such as CICO has yet to be investigated in the research (Burke & Vannest, 2008).

DPR limitations. According to LeBel, Chafouleas, Britner and Simonsen (2013), lost DPR data leading to decreased parent involvement is a limiting factor for any Tier 2 program and is identified as in need of further investigation by researchers (LeBel, Chafouleas, Britner, & Simonsen, 2013; Simonsen, et al., 2010). In these studies, data collection and parent involvement were identified as limitations to the success of Tier 2 interventions. As students carry paper-based forms to each class, too much DPR data is lost in the process, interfering with consistent home-school communication. The problem is finding the most effective way to communicate with parents. (Hawken & Horner, 2003; LeBel, Chafouleas, Britner, & Simonsen, 2013; Simonsen, Myers, & Briere, 2010).

In a recent New England urban middle school study by Simonsen, Myers and Briere (2011), a standard practice (counseling) group was compared to a Tier 2 (CICO) group to

determine which was more effective as an intervention to decrease the occurrence of problem behavior. The researchers used a randomized pretest-posttest control group design. However, several important limitations to this study were noted by Simonsen et al. (2011). First, the sample size for their study was small (N=42) and treatment groups' sizes were unequal; 27 students were randomly assigned to CICO, and 15 students were assigned to the standard practice condition. This small sample size greatly reduces statistical power, and is a limitation to many educational researchers (Fabiano et al. 2010; LeBel et al. 2013; Warner, 2013). During the study, half of the data being collected to determine the number of days the DPRs were being returned was lost, so only the first half was retained. (The DPRs themselves were not lost) With the remaining data, it was determined that only 80% (n=16) of the students returned their point sheets daily. Both groups of students used paper DPRs. Simonsen et al. (2011) identified various reasons for the inconsistent collection of paper-based DPR data, such as student forgetfulness and loss of paper-based DPRs for unidentified reasons.

In this section, the review began with a general overview of MTSS, including the history and purpose of it. The belief that all students can learn if given the appropriate supports is the philosophical foundation for MTSS (Connecticut State Department of Education Bureau of Special Education, 2014). Although multi-tiered designs can be used in many areas of education, this review focused on the academic component (RTI) as well as the behavior component (SWPBIS). As a student's Tier level increases, so also does the intensity of the intervention being used to help him. Tier 2 programs such as CICO make use of a DPR for class-by-class daily progress monitoring as well as communication with the student and the parent. Specific goal areas are identified in the DPR. The student receives feedback as the teacher indicates, on the DPR, his progress for that day. On a typical DPR, the teacher indicates, on a scale from 0 to

2 or 0 to 3, how well the student (a) showed respect, (b) followed directions, (c) arrived to class on time, and (d) followed rules and safety precautions; he can also make comments, and indicate whether or not the student has done his homework and submitted his DPR at the start of class. The student carries the DPR from class to class, and if he is able to earn a certain number of points, his behavior is reinforced with rewards. The DPR is sent home for the parent to review and provide support at home. Finally, limitations of the DPR, based on various research studies, were reviewed.

Parental Involvement

Finding creative ways to increase parental involvement continues to be a theme in education at the beginning of the 21st century (Epstein J. L., 2007; Epstein, et al., 2009; Data Quality Campaign, 2015; Guidera, 2015). In a recent meta-analysis of 51 studies on parent involvement programs in urban settings, Jeynes (2012) found parental involvement programs were associated with increased academic achievement. In over half of the studies completed in these urban settings the effect sizes ranged from .2 to 1.0. These studies were consistent even when significant controls such as race, socioeconomic status, and gender were used. Bhargava and Witherspoon (2015) found that individual and neighborhood characteristics had an influence on parental involvement in middle and high school settings. They found that race, socioeconomic status and gender influenced parental involvement. These findings are consistent with findings from other studies (Stone, 2006; Wang & Sheikh-Khalil, 2014). The following section will review the historic literature on parent involvement beginning with the theoretical model developed by Hoover-Dempsey and Sandler (1995,1997) which led to the more inclusive work of Epstein, et al. (2009) to not only involve the parents but also the family and community. In the Epstein model, a central component of parental involvement is communication, which is

evolving as technology evolves and which provides new ways to communicate and collaborate online. The need to communicate educational data to maintain transparency must also ensure security and privacy of that data. Educational web-based applications are providing unprecedented access to parents for a variety of purposes. Finally, *Google Apps for Education* (GAPE) is reviewed.

The Hoover-Dempsey model of parental involvement. The theoretical model developed by Hoover-Dempsey and Sandler (1995, 1997) is able to illustrate, at least in part, the process of parent involvement. The model is made up of five levels (see Appendix B). Beginning with the most general, level one focuses on the initial decision by the parent to become involved with the child's education. The second level describes the type of involvement or "form of parental involvement" and influences (p.4). The third level describes the "mechanisms" by which parents' involvement "influences the child outcomes" (p.4). Level four indicates the "mediating variables," and level five the ultimate "child outcomes" (p.4). The overall model has been used as a standard for parent- involvement research (Epstein, 2007; Liu, Black, Algina, Cavanaugh, & Dawson, 2010; Sheldon, 2002; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005).

The first level in the Hoover-Dempsey and Sandler (1995, 1997) model describes three constructs or influences on parent's decision- making process to become involved in their children's education: (a) parental role construction, (b) parental efficacy, and (c) the invitations and demands coming from the child and the school. These constructs are based on parental ideas about what ought to be the role of the parent. Parental Role Construction refers to the parents' beliefs about their role as parents and the degree of involvement they believe is appropriate at each stage of their child's development. Parental Efficacy refers to parents' perception that their action is helping their child's education (Hoover-Dempsey & Sandler, 1997).

The Hoover-Dempsey and Sandler (1995) study is a foundational model of parent involvement. The Hoover-Dempsey and Sandler (1997) study narrows its focus to the question of why parents make the choice to become involved in their child's education. Since this study is concerned with this particular aspect of parent involvement, it is important to outline the constructs of the model. This study positions itself from the perspective of the parent rather than from the outcomes on student achievement.

Parent role construction. The first major construct influencing parent involvement according to Hoover-Dempsey (1997), is the subjective beliefs of parents on what parents ought to be doing with regard to their children's education, and is guided by their thoughts about parental role. The role construction is established by various factors, including their own experience, the things they were taught about parenting, as well as their own parents' role in their education. There are both external and internal expectations that influence role construction. External expectations by community members, families, churches, and schools are strong influences on parents' role construction. External influences on parents' involvement may also include the expectations of school personnel; internal expectations are those that are self-imposed (Hoover-Dempsey & Sandler, 1997).

Parental efficacy. The second major construct influencing parental involvement is the parents' sense of efficacy or their perceived ability to maintain a positive influence on their child's education (Hoover-Dempsey & Sandler, 1995). The premise for parental efficacy is aligned with Bandura's (1989) theory of self-efficacy and the individual's ability to control events affecting their own lives. Parents make choices that they believe will achieve certain goals. The parents' degree of self-efficacy will determine the extent of their involvement in their child's education. In general, the higher the sense of self-efficacy, the more persistent a parent

will be in striving to achieve certain goals. In contrast, the lower the parent's self-efficacy, the less persistent he will be in pursuing a goal in this case, influencing his child's education (Bandura, 1989).

The Epstein model of parent and family involvement. Epstein (2015) founded the National Network of Partnership Schools (NNPS) working out of the Center on School, Family, and Community Partnerships (CSFCP) at Johns Hopkins University. Using Hoover-Dempsey and Sandler (1995, 1997) as a guide, Sheldon and Epstein (2007) have developed the Parent Survey of Family and Community Involvement in the Elementary and Middle Grades. From their research, Epstein, Sanders, Simon, Salinas, Jansorn, and Van Voorhis (2009) acknowledge positive home conditions, involvement at school, home learning activities, and communication are significant influences upon the parent and family. Epstein et al., (2009) encourage transparency as well as parent involvement in decision-making within the school. Studies show the Epstein model of parental involvement is promising for student achievement (Ingram, Wolfe, & Lieberman, 2007; Lopez & Donovan, 2009).

The impact on student achievement of parent involvement is demonstrated thoroughly in the research (Bower & Griffin, 2011; Epstein J. L., 2007; Henderson, Mapp, Johnson, & Davies, 2007). In their book entitled *Beyond the Bake Sale*, Henderson, Mapp, Johnson, and Davies (2007) stress the importance and the benefits of building partnerships between home and school, families and teachers. Research continues to demonstrate that parent and family involvement encourages academic, social, and overall success on the part of students (Hoover-Dempsey & Sandler, 1997; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005; Sheldon, 2002).

Central to all relationships, including the relationship between home and school, is communication (Epstein, 2007). Research by Bower and Griffin (2011) shows that parent-

teacher communication is a key aspect of increased parental involvement and helping students achieve at high levels. The next sections will examine and review the research specific to parent involvement and technology.

Parental Engagement and Technology. Parental involvement is a significant factor in a child's education, and a central component of parental involvement is communication (Henderson, Mapp, Johnson, & Davies, 2007; Hoover-Dempsey & Sandler, 1997; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005). If communication is central to empowering parents and increasing parents' knowledge of how best to support their children, then increasing parents' access to their child's educational data should enhance this process. However, precautions must be put in place to protect students' privacy. As society becomes more reliant on cloud computing and electronic communication, protecting Personally Identifiable Information (PII) becomes a priority (Data Quality Campaign, 2015; Guidera, 2015; Weber, 2016; Sheikh & Goldberg, 2014).

The U.S. Department of Education has created the Privacy Technical Assistance Center (PTAC) as a resource for data privacy policies and practices for educational institutions. Recent guidance has been issued entitled *Protecting Student Privacy While Using Online Educational Services: Requirements and Best Practices* (U.S. Department of Education, 2015). The document claims that many Online Educational Services (OES) use a clickable Terms of Service (TOS) agreement which expedites the subscription process, thereby facilitating the buyer and seller terms. These are known as "Click-Wrap agreements" (p. 1). These agreements govern the contractual relationship and may include data collection and sharing privileges. According to the document, these quick click agreements may be in violation with the Family Educational Rights and Privacy Act (FERPA) and the Protection of Pupil Rights Amendment (PPRA), and they may

also violate best practice for student and family privacy (p. 1). Warning is given to Local Education Agencies (LEAs) to practice due diligence in reviewing all agreements prior to clicking through so that student privacy remains protected and parent and family trust is not broken (U.S. Department of Education, 2015).

Although student privacy may be at risk, the U.S. Department of Education (2014) urges schools to be transparent with parents and families in sharing the wealth of educational data that are collected and the many valuable ways they are being used to inform decisions that improve the education of their children. Educational data collection is nothing new, but the move to OESs is. Parent expectations are that schools are going to protect their children's data (U.S. Department of Education, 2014). While transparency is essential to maintaining trust with parents and families, schools and districts have legitimate reason to exercise caution when choosing the OESs through which educational data will be communicated with parents and families. The potential risks to student privacy are outweighed by the convenience offered by the technological capabilities of the OESs (Data Quality Campaign, 2015; Guidera, 2015; U.S. Department of Education, 2014).

The National School Public Relations Association (2011) conducted a survey of parents regarding home-school communication preferences. They asked 268,917 residents, representative of 50 school districts within 22 states, to participate, and 43,410 people participated in the survey. The survey highlighted several important points. In terms of media, parents preferred to receive direct communication from school leadership and teachers in electronic formats such as email, text messages, e-newsletters, etc. However, social media vehicles like Twitter and Facebook were among the lowest-rated communication preferences. Newspapers and television were also among the least-preferred media. Parents preferred

instantaneous information delivered electronically. In terms of content, parents wanted information about their child's performance in the classroom. Parents desire information concerning how well children are doing in school, and how they can help their children to be successful (National School Public Relations Association, 2011). If their child is not doing well, his parents want to know immediately, not when it is too late to change. Parents also want information regarding their children's behavior, as well as feedback regarding social skills and expectations for academic content area, to be conveyed to them. Ron Koehler, President of the NSPRA, asserted the importance of schools in engaging parents with "open, honest, and transparent communication" (National School Public Relations Association, 2011, p. 2).

Hall and Bierman (2015) reviewed the literature on technology-based interventions for parents of young children. They reviewed 48 studies and report the following findings. They confirmed that the majority of persons in the U.S., at every level of income, has cellphones. Communication with parents may be increased by use of smartphones and text messages. Since the technology studies are broad in scope, particular research is needed on the use of technology and interventions. "In general, more research is needed on the characteristics of technology-assisted intervention components that are associated with intervention impact" (Hall & Bierman, 2015, p. 30). They concluded that technology delivery methods for interventions are promising. A recommendation was made for further research to find whether productivity is increased with the new technologies, and whether this productivity might be helpful to children and families (Hall & Bierman, 2015).

The continual expansion of both home and mobile access to the internet has been accompanied by the growth of technology giants such as Google, Microsoft, and Apple (Arthur, 2014). These companies have recently initiated the development of educational technology.

K-12 educational institutions are now moving their server and software technology from in-house to third-party cloud-based computing options (Sheikh & Goldberg, 2014; Weber, 2016). Due in part to the annual cost of updating software and local computer networks and servers, Educational Software Providers (ESPs) now offer both Infrastructure as a Service (IaaS) as well as Software as a Service (SaaS). These services allow districts to cut back on human resources required to maintain local servers and to consistently upgrade district computers while consistently maintaining the most cutting edge version of various software applications. These services also have created new ways for students, parents, teachers, and administrators to collaborate and communicate through shared documents (Meister & Solow-Niederman, 2014).

In their recent review of cloud-based services Meister and Solow-Niederman (2014) explain that both *Google Apps for Education* (GAFE) and Microsoft's *Office 365 for Education* (Office 365) combine IaaS and SaaS to provide a suite of education applications most suitable for the K-12 educational environment. These tools are accessible through the internet and mobile applications; they allow for both collaboration through sharing, as well as privacy maintained by linking individual identity with activity. Microsoft 365 offers its widely-used line of office products to K-12 schools with the option of using them as web-based applications. Both free and paid service plans are offered (Meister & Solow-Niederman, 2014).

Google Apps for Education (GAFE). According to Weber (2016) Google's popular services are well established. Weber states that YouTube, which is owned by Google, makes up 20% of daily downstream per day, and that Google Search facilitates 3 billion searches per day. He explains that there are approximately 425 million Gmail users, and that there were one billion downloads of the Gmail application to android phones in 2014. Further, Google Apps for Education (2015) boasts 45 million users representing 190 countries; seven of eight Ivy League

Schools use it. He determined that GAFE is the best-selling educational device in the United States (Google, 2015). Being relatively new, the research base consisting of peer-reviewed literature on GAFE is quite limited.

Cahill (2014) completed a qualitative research study to discover what professors thought of collaboration tools offered by GAFE. Various themes that emerged in the study were that Google Docs were preferred for information sharing and collaboration; Google Calendar and Gmail were used for scheduling; and Gmail was predominantly used for communication. Disadvantages to GAFE were that many features were limited as compared to Microsoft Office; there was some difficulty in accessing certain tools and instruction; and that there was a constant fear that the students' work would all be lost. The implications of the study were that as 21st century technology allows for people from around the globe to work collaboratively, the expectation will be for educational institutions to prepare students for this type of collaborative work experience. The strength of GAFE lies in the communication and collaborative aspects which, by many, are seen as essential skills for the 21st century workforce. These collaborative aspects of GAFE are essentially what makes the two types of DPRs used in this study different. Cahill suggests that use of the DPR-X system be conducted using Google forms and websites to make DPR data accessible to parents and students

In a 2011 case study, Google (2015) reported one school's move to adopt GAFE. The Fountainhead Global School, in Hyderabad, India was looking for a way to enhance parental involvement and communication online. According to the case study, GAFE was selected because of its low maintenance requirements, its security, and its ability to selectively provide access to specific users. The amount of time it took to deploy the web-based applications and train the staff was very short. The apps were highly intuitive and allowed for users to learn about

the products as they used them. Google sites allowed for immediate distribution and limited access to the parts of the website that were to be kept private. Unlimited access was given to those parts of the website that were to be shared universally. A Gmail login ensured user identity was secure and that document revisions could be traced to an individual. The study highlighted the following benefits to the GAFE adoption and rollout: Both money and time were saved by GAFE, since no webmaster had to be hired to continually update the site. Paper documents were greatly limited, since all data and updates were available instantly, from any internet-connected device. Communication with staff and parents was quick and seamless, incorporating the ability to access pictures and videos of students working on classroom activities (Google, 2015).

One possible way to increase accessibility of DPR data to parents and increase levels of home-school communication is to use an ESP such as Google apps for education in order to make DPR data more convenient to access (2015). The collaboration components of this suite of tools makes possible secure sharing of educational data with all stakeholders including parents (Google, 2015). The DPR-X provides the security and transparency called for by parents (Guidera, 2015), with the academic and behavioral information parents want delivered in the electronic medium they have expressed a desire for (National School Public Relations Association, 2011).

In this section on parental involvement, the historic work of Hoover-Dempsey and Sandler (1997) and the more recent work of Epstein (2007) were reviewed. Parental role construction and efficacy were important components leading to greater parent engagement. In their communications with parents, schools strive for a balance of privacy and transparency. when engaging parents. Parents want to know what all the educational data means, and how it is being used to inform decisions to help their children. When selecting technology to enhance

transparency, “click-wrap” agreements should be carefully scrutinized to comply with FERPA. Recent survey data shows that the majority of parents are connected to the internet in various ways and that parents want to know how their child is performing at school (National School Public Relations Association, 2011). Recent SaaS offerings by technology giants such as Microsoft and Google are reshaping the way educational technology is handled by schools (Arthur, 2014). There is an agreement that communication and collaboration are vital to preparing 21st century students for the workplace. The opportunity to better prepare students for the workplace, and the ability to reduce operating costs, are inducements for schools to adopt SaaS offerings. Google Apps for Education offers privacy, security, accessibility, immediacy, and convenience in their package (Google, 2015). As Meghana Musunuri, founder of the Fountainhead Global School puts it, “Apps is a time saver, efficiency booster, and confusion crusher” (Google, 2015, p. 2).

Review of Literature Summary

This chapter began by reviewing the history of MRT, how it is being used to further educational research on education communication media, and the development of the PASS. Parents tended to select more rich media such as face-to-face conversations when they felt the topic was very important and wanted to experience contextual clues, such as body language. Given the nature of behavioral concerns and the emotional nature of both the parent and the teacher, oral communication in person or over the phone was preferred to less media- rich forms of communication. However, when the parents of students with problematic behaviors were interviewed, many of them preferred the more objective email communication (Thompson B., 2008). When the parents and teachers had time to think about their responses and write them in email communication, they tended to be less emotional and more objective (Thompson, 2008).

According to previous studies, parents usually prefer communication with teachers using lean media. Researchers believe this preference may be determined by the convenience and ubiquity of wireless communication through smart phones and other mobile devices (Thompson, Mazer, & Grady, 2015; Heath, Maghrabi, & Carr, 2015; Sung, Chang, & Liu, 2016). According to Thompson, Mazer, and Grady (2015), “scholars might formally test associations among the frequency of parent-teacher communication, student learning outcomes and success in school, and how communication between parents and teachers might affect relational satisfaction between parents and their children” (p. 205).

This review then examined the research on MTSS and how multi-tiered delivery systems continue to be put in place in an effort to provide students what they need to achieve at high levels. MTSS includes various systems such as Response to Intervention (RTI), Scientific Research Based Interventions (SRBI), School Wide Positive Behaviors Interventions and Supports (SWPBIS), and other leveling systems for differentiating instruction to meet the varied needs of each student. The system focused on behavioral outcomes is SWPBIS.

As part of the SWPBIS model, students in the secondary and tertiary tiers often use some form of the daily progress report. These may include *Direct Behavior Ratings (DBR)*, *Daily Report Card (DRC)*, *Good Behavior Note (GBN)*, a simple point sheet, or a similar tool. Each of these paper-based DPRs is meant to establish a class-by-class feedback system for the student as well as a daily point of contact with the home. According to Filter, et al. (2007) “There was notable variability, however, in the extent to which parents were involved in the [Check in/Check-out] program” (p. 81). Increasing contact between parent and teacher is essential to parental involvement. As parental involvement increases, student academic engagement and

success is also increased (Epstein, 2007; Epstein, et al., 2009; Hoover-Dempsey & Sandler, 1995; Hoover-Dempsey & Sandler, 1997).

Research on electronic collaboration and communication tools offered by Google Apps for Education (GAFE) is promising. Using these collaboration and communication tools with the student DPR may be significant theoretically and practically. According to Simonsen, Myers, and Briere III (2010), “there was some inconsistency with tracking students’ daily point totals because of (a) students forgetting to request teacher feedback and points at the end of each period, (b) students failing to return point sheets in the afternoon, and (c) changes to the procedures for data entry” (p. 44). Handing a paper-based report to a middle school student who is already identified as a Tier 2 student in need of more intensive supports may not work as practically as using an electronic form. Removing the additional paperwork, yet allowing the student to access the points electronically, may be more practical.

Theoretically speaking, the ability to share student data with all stakeholders at one time regardless of location via mobile devices and internet has been made possible. The sharing aspects of GAFE allow for real-time access to updated educational data for students, parents, and school stakeholders. The ease of access as identified by Ho, Hung, and Chen (2013) confirms the importance of this study to test the impact of the DPR-X against the paper-based DPR. Dr. Simonson, SWPBIS researcher at UCONN, stated she had heard of districts using technology to collect data, and to communicate with parents, but had not come across any studies examining the effects on parental involvement (personal communication, June 26, 2015). Dr. Chafouleas, behavioral assessment researcher at the University of Connecticut, stated that she was not aware of any published studies about the use of electronic media to collect and disseminate behavior data (personal communication, June 28, 2015). Also, Dr. Riley-Tillman,

behavior intervention researcher at the University of Missouri, was aware of the use of an electronic format, but had not directly studied that approach with respect to using an electronic form of the DBR-SIS (personal communication, June 29,2015).

Given the ubiquity and availability of new collaboration and communication tools, as well as the importance of parent involvement to enhance student outcomes, and the emerging preference by parents for mobile communication, a study is needed that compares the effects of communicating DPR data to parents using paper-based forms, with those of communicating through electronic collaborative tools, such as Google Apps for Education.

CHAPTER THREE: METHODS

In the following chapter, the research design for this study is identified, discussed, and aligned with the purpose of the study to answer the research questions. First, the design of this study is described, including sample recruitment and group assignment, followed by the research question and accompanying null hypotheses. Next, the participants and setting of the study are described in detail. The instrumentation section describes the PASS survey used to collect the data for this study, along with its reliability and validity statistics. This is followed by a detailed description of the procedures followed for this study. Finally, a description of the data analysis conducted is provided in preparation for Chapter Four.

Design

The research design used for this study was a quasi-experimental posttest- only control group design (Gall, Gall, & Borg, 2007; Campbell & Stanley, 1963; Shadish, Cook, & Campbell, 2002). The purpose of this study was to use the Parent Academic Support Scale (PASS) survey, rooted in Media Richness Theory (MRT), to compare the communication scores of parents who receive paper DPRs with those of parents who receive electronic DPRs. The independent variable was the DPR medium used for home-school communication, either paper-based DPR-SP or electronic DPR-X. The dependent variable was parental involvement as measured by the PASS survey. The PASS survey measured two aspects of parent involvement, namely, communication regularity and communication media preference (Mazer & Graham, 2015; Thompson & Mazer, 2012).

According to Campbell and Stanley (1963), the posttest- only control group design is useful for studies in which different formats are being studied and where student anonymity must be kept. This design controls for most major threats to internal validity and is a more natural

design than the pretest posttest control group design. The posttest only control group design is appropriate for this study because a pretest would draw unnecessary attention to the variables under study, causing a potential threat to internal validity called the “testing” threat (Campbell & Stanley, 1963, p. 9). Parents taking the PASS survey as a pretest would be made aware of the variables being observed and may be influenced by the expected outcomes inferred in the 16 Likert scale items. These variables, being specific to parent communication practices, carry with them ideas regarding what is socially acceptable, or expected by the school, and would most likely influence the behaviors of the parents under investigation. Further, as noted by Campbell and Stanley (1963), involving parents in a single survey after involvement in either treatment or control condition seems to be a more natural, less awkward arrangement, causing less attention to be drawn to the experiment.

The justification for using the quasi-experimental posttest- only control group design is to maintain as much similarity between treatment and control groups as possible in order to isolate any effect of the DPR-X on parental involvement (Campbell & Stanley, 1963; Gall, Gall, & Borg, 2007). This design allowed the researcher to create two very similar groups of students whose parents were surveyed for comparison using an independent samples *t* test to find any significant difference between the groups of parents receiving electronic DPRs and the group of parents receiving paper DPRs.

In educational research there are occasions when each individual cannot be randomly assigned to either a control or experimental group due to previous placement or classroom assignment (Gall et al. 2007). In such cases, preexisting or intact groups must be used. In this study, students using a DPR were in preexisting groups assigned by administration such as Special Education clusters or MTSS intervention programs such as CICO and Focused Support

Program (FSP). In order to avoid the threat to external and internal validity (known as the “Hawthorn effect”), intact groups of students either used the DPR-X or the DPR-SP (Gall et al. 2007). According to Rovai et al. (2013) the Hawthorn effect refers to the tendency of people to change their behavior when they know they are being observed. For instance, if a parent is given the PASS survey as a pretest, the very questions being asked of him may cause him to be more aware of certain standards of parent communication. He may further feel that he is deficient in this area, and that he is not communicating with teachers as much as might be expected of them. He may then want to improve this perceived deficiency. This psychological effect can threaten the external validity of the study. The internal validity may likewise be threatened when students find that a peer in their cluster is using the electronic DPR, while they are still using the paper. Seeing these different treatments being used by one another may cause behaviors that would otherwise not be present. For instance, students may deliberately lose their papers, or refuse to carry them, in order to be allowed the use the electronic version of the DPR.

According to Campbell and Stanley (1963), the strongest research design for this type of research study would be a true experimental design with random sampling from a given population to ensure equivalent groups. However, within the field of education, it can be extremely difficult to achieve random assignment when working within schools. Gall et al. (2007) provide solutions to problems with random assignment that may arise in cases where intact groups must be used. The random assignment of intact groups procedure used for this study is presented in Figure 4 and discussed. The sample size ($N = 45$) used in this study surpasses the minimum sample size ($N = 40$) called for by Gall et al. (2007) to achieve statistical power of .70 to detect a large effect size of .80 standard deviations and a statistical power of .7 with an Alpha level of .05.

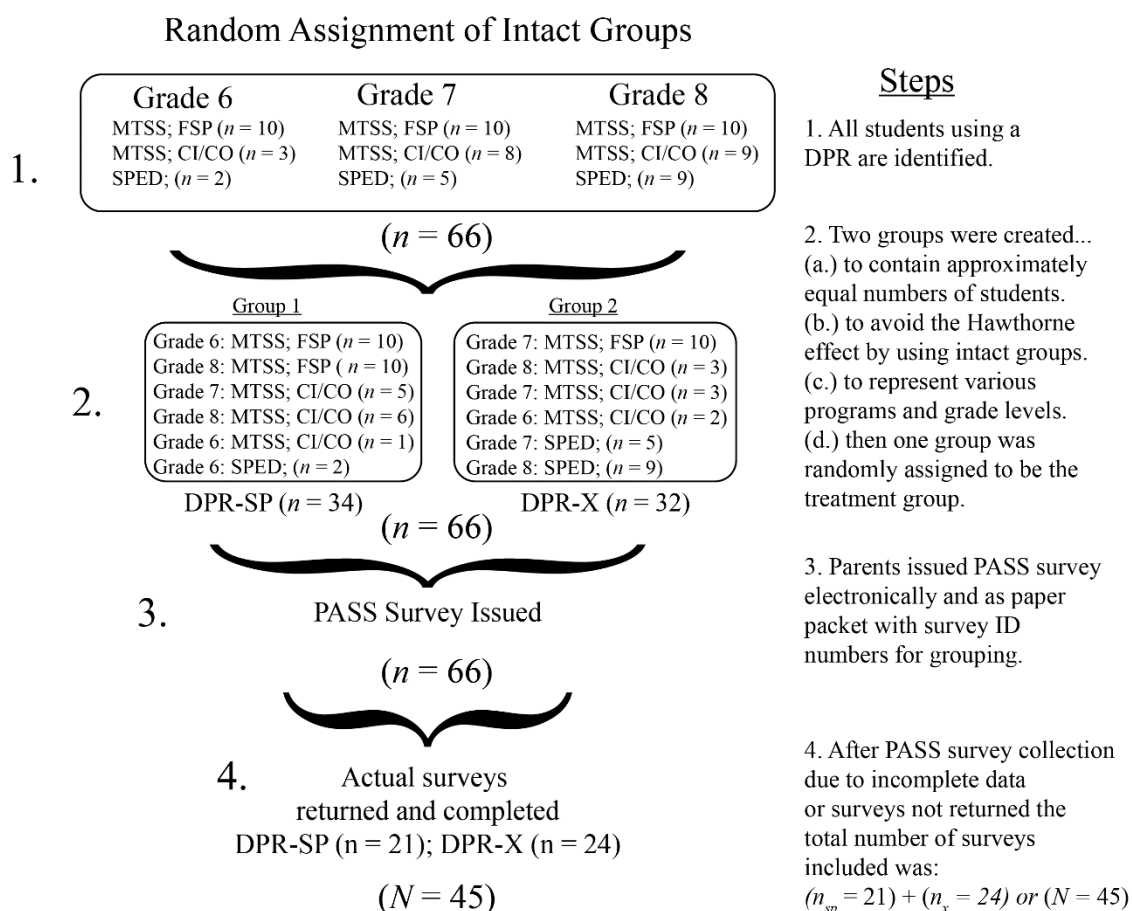


Figure 4. Random assignment of intact groups and collection of PASS survey data.

In order to create randomly assigned samples using intact clusters of students, all students using DPRs were identified (Figure 4 Step 1) and placed into one of two heterogeneous groups containing students from each program and grade level (Figure 4 Step 2). These two groups contained approximately equal numbers of students who were then randomly assigned, one to the treatment ($n = 32$) DPR-X and the other to the control group ($n = 34$) DPR-SP. These groups were formed in order to avoid the Hawthorn effect, and the researcher issued the same communication medium, either electronic or paper, to all students in the same cluster. This step

was taken to avoid confusion, which factor might influence behavior on the part of the students. The parents of the students in both groups ($n = 66$) were invited to participate in the PASS survey. The parents who returned completed surveys ($N = 45$) were the participants in this study. This surpassed the minimum number of participants ($N = 40$) called for by Gall et al. (2007) to provide adequate statistical power ($.70$; $\alpha = .05$). To focus this study, the following research question was posed with four accompanying null hypotheses.

Research Question

RQ1: Is parental involvement effected differently for parents whose children use paper-based daily progress reports compared to parents whose children use electronic daily progress reports as measured by the Parental Academic Support Scale (PASS) survey?

Null Hypotheses

H₀₁: There is no significant difference in Communication scale scores between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

H₀₂: There is no significant difference in Academic Performance subscale scores between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

H₀₃: There is no significant difference in Classroom Behavior subscale scores between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

H₀₄: There is no significant difference in Media Preference selection between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

Participants and Setting

The participants in this study were a convenience sample of parents who had children attending a middle school in Southern New England during the 2015-2016 school year. The school district was located in a suburb comprised of families whose incomes ranged from very high to very low. The total population was 29,067 residents with a 5.1% poverty rate. At the middle school, 37% of students were eligible for free or reduced-price meals (see Table 1). Each parent participant had a child in grade six through eight who was attending the middle school, and whose age ranged from 10 years of age to 15 years of age. The racial composition of students in the middle school was (a) White 26%; (b) African American, 47%; (c) Hispanic, 17%; (d) Multiple Race, 4.5%; and (e) Asian Pacific, 3.5%. The total middle school minority population was 83% (Connecticut Economic Resource Center, 2015; Connecticut State Department of Education, 2015).

The parents who made up the convenience sample used for this study were those parents ($N = 40$) who had children using a DPR and who returned the completed PASS survey. The majority of students whose parents returned the survey were in grade eight ($n = 22$; 55%), male ($n = 32$; 80%), black ($n = 30$; 75%), with free and reduced meal plans ($n = 27$; 67.5%). The majority of parent participants were female ($n = 34$; 85%), black ($n = 28$; 70%) with male parent participants ($n = 6$; 15%) in the minority. The student and parent demographics of the related samples are presented in Table 2. See Appendix K for the related samples chart.

Table 1

<i>Town and School Demographics</i>			
	Town	Middle School	Percent
Total	29,067	678	100
Male		353	52
Female		325	48
White	15,590	182	26
Black	10,231	321	47
Asian Pacific	1,299	24	3.5
Native American	13	0	0
Multi-racial	1,934	31	4.5
Hispanic	2,491	118	17
Total Minority	13,477	560	83
Free & Reduced Meals		251	37
Average Class Size		17.5	
Students with Chromebooks			100
Internet access at Home			95

Note: Town and Middle School Demographic information citations (Connecticut Economic Resource Center, 2015; Connecticut State Department of Education, 2015; NSCC School Climate Survey Report, 2015).

Table 2

Parent and Student Demographics (N = 45)

Characteristic	Students	Percent	Parent Participants
Grade Level			
Grade 6	8	18	8
Grade 7	12	27	12
Grade 8	25	55	25
Gender			
Male	35	78	8
Female	10	22	37
Race			
Black	33	75	30
White	2	5	4
Hispanic	9	17.5	9
Asian	1	2.5	2
Socioeconomic Status			
Paid	15	33	15
Free & Reduced	30	67	30

Note: Survey participant demographics retrieved from schools records using PowerSchool 2016

The site used for this study is a large southern New England middle school located in Connecticut. Since the 2003-2004 school year, the total student population (N = 1091) has been steadily decreasing due, among other factors, to the expanding options for student attendance at local magnet schools. During this study, the school's enrollment (N= 678) was the lowest it had been in recent school history. The school is a diverse learning community with regard to the demographic variables of race, ethnicity, and socioeconomic status. Following a middle school philosophy each grade level (6-8) is divided into three teams to facilitate organization and administration by creating smaller groups of students. In an effort to reduce racial, ethnic, and economic isolation, the school administration organizes each grade level team and classroom, balancing each according to race, ethnicity, ability level, and gender.

School Culture

The school culture is designed to encourage student involvement in both curricular and extracurricular activities. Each year, the Student Council organizes and sponsors multicultural activities celebrating the diversity of the student body. These activities include an annual celebration of black history during two school-wide assemblies which feature guest speakers who provide motivational messages. Students who express feelings of isolation are supported by a grade-level school counselor and social worker who may recommend and facilitate student involvement in after-school activities. Activities such as after-school clubs are offered in the fall and spring and are fully attended by diverse groups of students who have similar interests and represent various grade levels. These activities, including African Dance, Drill Team, Real Robots, Science Sleuths, Webmasters, and 3D printing are offered to all students, enhancing the overall school culture and providing a relaxed environment for students. Late buses are scheduled three days a week to provide students with transportation, facilitating student participation in these and other after-school programs.

Another way the school tries to build a sense of community is through the use of field trips. Field trips encourage teamwork and students' accountability for one another as they explore destinations away from the school campus. Throughout the year, students are given the opportunity to participate in fundraisers that help them to pay for these grade-level field trips. In an effort to increase participation in field trips, scholarships are offered to students who otherwise might not afford them.

The school is self-described as a learning community comprised of students, parents, guardians, educators and various community members who are always looking for ways to improve current practices. As part of improving both general and special education services, the

school is currently developing its Multi-Tiered Systems of Support (MTSS) model to ensure that each student has the supports he needs to meet academic and behavioral expectations. The school is restructuring existing programs to proactively engage parents and families.

School Climate

Within the realm of general and special education the MTSS model is used to systematically increase supports for parents and students who need them. For instance, all students are given universal (Tier1) supports to ensure academic and behavioral success. After teachers review students' data, they may recommend to the Student Assistance Team (SAT), -- group of administrators, teachers and school counselors which reviews student success and makes recommendations regarding the use of interventions-- that certain students participate in the MTSS intervention programs. These programs offer Tier 2 and Tier 3 services, which are more intensive and individually focused than those provided in the universal tier (Tier 1). Students whose needs are not being accommodated within Tier 1 are placed within Tier 2; at this level, students are provided a higher level of supports (Crone et al., 2010) When the data is again reviewed, administrators reassess the needs of each student, determining to (a) keep him in Tier 2; (b) send him back to Tier 1; or (c) place him in Tier 3, where he will receive more rigorous support. If students are still not meeting expectations, special education testing may be recommended and other more intense intervention options are explored. During this study, students using a DPR ($n = 66$) represented 10% of the school population. This percentage is typical of SWPBIS school estimates by Sugai and Simonsen (2012, 2013) defining upper tier populations as 10% -15% of the total school population (Sugai & Simonsen, 2013).

A review of the annual National School Climate Council (NSCC) school climate survey reveals that this particular middle school scores consistently low in the area of social-emotional

security (National School Climate Center, 2015). In an effort to build up the social-emotional aspects of the school, the school operates using the SWPBIS model (Positive Behavioral Interventions & Supports, 2016). The SWPBIS program operates using various positive incentives to encourage good behavior school-wide. The school uses a system of tickets for good behavior as well as a Very Invested Person (VIP) program that allows special privileges to students who consistently adhere to the code of conduct which is based on school-wide values. In alignment with the PBIS model, expectations for student behavior are clearly posted throughout the building. More specific expectations for behavior in the school auditorium, school library, and school cafeteria are clearly posted and reviewed with students frequently.

The school is entering its fifth year of full implementation of SWPBIS. With the introduction of SWPBIS, the school experienced a decline in behavior referrals for three years. However, in the last two years, the school has experienced a resurgence in problem behaviors school-wide. This resurgence is being met with revisions to the MTSS intervention programs being offered. One aspect of the revisions is this particular study, which compares the use of the paper-based DPR-SP to the electronic DPR-X to see if there is a difference in parental involvement between groups.

The school has stated its commitment to parent and family engagement as part of the school improvement plan. The school administration understands the connection between parent involvement and student achievement. As a means of outreach to parents, educators at the school maintain consistent communication between home and school in a variety of ways. Staff members at the school are strongly encouraged to communicate frequently with parents and guardians using post cards, email and telephone. Teachers are required to reach out to parents, sharing the positive things that are happening in the classroom and in the school. One way this is

facilitated is through the use of Good News Postcards. Each academic quarter, teachers mail parents handwritten postcards sharing good news and praising student accomplishments.

Teachers are also required to phone parents when any disciplinary referrals are made. When a teacher initiates an office referral he is required to call the parent and to explain the situation; when a teacher receives a phone call or email from a parent, the teacher must respond within 24 hours of receiving it.

Google Apps for Education is used district-wide to provide remote access by parents and students to academic and behavioral content to support parents who are providing their children with academic assistance. Parents can also use internet-connected devices to access Google classrooms; these virtual classrooms provide parents with instant access, from any location, to academic classwork or homework. Other, more traditional means of outreach to parents are employed on several evenings throughout the school year, including but not limited to: open houses, a grade level academic content night, various musical performances, history night, parent conferences, and transition programs for parents of students entering the 6th grade from district elementary schools.

Instrumentation

The PASS survey was the data collection instrument used in this study. The PASS is a 16- item Likert scale survey initially designed by Thompson (2008) and further developed by Thompson and Mazer (2012) for the purpose of studying parental involvement, with reference to five different factors. The PASS is unique in that it gathers information from the parent's perspective regarding parent-teacher communication. Permission to use the PASS for this study was given by its designer, Dr. Blair Thompson, associate professor of communication at Western Kentucky University (see Appendix D). As mentioned earlier, the 21st century has been a time of

expanding the role of parental involvement in public education, from grades Pre-K through grade 12, due to government funding and national policies (Epstein J. L., 2015; Mazer & Thompson, 2016; U.S. Department of Education, 2016). In this particular study data were collected on two specific aspects of parental involvement. Using the PASS survey, communication data was collected to determine PASS - communication scale scores and PASS - media preference scores.

According to Mazer and Thompson (2016), parent communication is an essential component of parental involvement that has experienced dramatic change in the last decade due to a variety of forces including, but not limited to, wireless technologies, such as the SmartPhone, that allow more convenient internet connectivity and communication (Thompson, Mazer, & Grady, 2015). In this educational communication context the PASS was designed to examine the communication component of parental involvement at the Pre-K through grade 12 level.

The PASS is a 16- item Likert scale survey given to parents to collect information on parent-teacher communication and media preference. Their answers to these surveys provide important parental perspective on the topic of parent-teacher communication. The PASS asks parents about the regularity of their communication with teachers as well as their preferred medium for communication within each the following five factors: academic performance, classroom behavior, preparation, hostile peer interactions, and health. The instrument has been used in numerous studies (Thompson B., 2008; Thompson, Mazer, & Grady, 2015; Thompson & Mazer, 2012; Mazer & Thompson, 2016).

Thompson and Mazer (2012) have analyzed these five factors for reliability. In their review of the reliability and validity of 21 instruments used in instructional communication research Mazer and Graham (2015) included the PASS. They state, “confirmatory factor analysis

supported the five-factor structure, providing evidence of factorial validity” (p. 222). Using factor analysis, Thompson and Mazer (2012) found that the five factors identified in their study, along with correlations between them, offer initial validity evidence for the PASS. Academic performance and classroom behavior are the two factors investigated as part of this study and are discussed in the following sections.

The PASS was designed by Thompson and Mazer (2012) using a blend of existing social support scales that were focused on understanding student perspectives. The PASS is an extension of the original work on Media Richness Theory (MRT) by Daft & Lengel (1986), and Lengel and Daft (1989), as well as educational research on Computer-Mediated Communication (CMC), such as that described in the work of Thompson (2008, 2009). The PASS was initially developed from an exploratory study by Thompson and Mazer (2012) derived from Thompson’s (2008, 2009) earlier studies of parent-teacher e-mail communication. The list of topics for the PASS was identified through the findings of Thompson’s (2008) work interviewing parents and teachers about the content of their communication via e-mail and other modes of communication, such as face-to-face meetings, phone calls, etc. A sample group of 191 parents of middle and high school students were surveyed using a list of 35 Likert scale items. Parents were asked to share the frequency and mode selected for communicating with teachers about these 35 items. After completing exploratory analysis, the list of items was narrowed to 16 items. Recent studies confirm the reliability and validity of the PASS (Thompson & Mazer, 2012; Thompson, Mazer, & Grady, 2015).

In a Thompson and Mazer (2012) study, using a group of 175 parents of students from grades K-12, confirmatory factor analysis (CFA) was conducted using five indexes of model fit. The chi-square (χ^2) for the PASS - communication scale demonstrated good model fit, $\chi^2 (45) =$

98.76, $p < .01$. Root mean square error of approximation (RMSEA) yielded .074 (90% CI = .053: .084). Non-normed fit index (NNFI) = .93 and comparative fit index (CFI) = .95 in line with good fit standard values above .90. Finally, the standardized root mean square residual (SRMR) = .0; a good fit should be less than .08 (Hu & Bentler, 1999).

In the most recent study, Mazer and Thompson (2016) established concurrent validity and construct validity with the Teacher-Parent Contact Scale (Seitsinger et al., 2008). This 12 item scale was used to measure regularity of parent contact in three preferred modes: writing, phone, or face to face. According to DeVellis (as cited in Mazer and Thompson, 2016, p. 214) concurrent validity is established through correlation with another validated instrument that evaluates a similar construct. In this case, the factors in the PASS and the Teacher-Parent Contact Scale showed significant positive correlations. Construct validity is established by examining how well a new construct fits with other well established constructs and research established relationships. In their study, Mazer and Thompson (2016) test the hypothesis that parent support as measured by the PASS should be inversely related to how well their child is doing in school. In other words, parents whose children are not performing well in school will score higher on the PASS. This relationship, confirmed by their study, supports their hypothesis and supports the construct validity of the PASS (Mazer & Thompson, 2016).

PASS - Communication Scale

The PASS - communication scale refers to the entire group of 16 items that make up the survey. The purpose of the PASS - communication scale is to measure the regularity of parent communication practices with teachers across all 16 items. Regarding PASS - communication scores, the survey begins with the following prompt, “This past month I communicated with my child’s teacher about...” (See Appendix A). This prompt is followed by 16 items. For instance,

item Q1 states... “my child’s grades in the class” (Thompson & Mazer, 2012, p. 140). Parents taking the survey then indicate, by checking a box, how regularly they communicated about this topic during the previous month. The communication scale item is rated by the parent using a Likert-type scale with a possible range of five designations: 1= *not at all*, 2= *once or twice*, 3= *about once a week*, 4= *several times a week*, 5= *about every day*. The scores of these 16 items were added together to produce the PASS - communication score which ranged from 16 to 80. The lowest possible total score of 16 meant that a parent indicated *not at all* for each of the 16 items. The highest possible total score of 80 meant that a parent had indicated *about every day* for each of the 16 items.

PASS academic performance subscale. The first factor of the PASS is referred to throughout the remainder of this document as the Academic Performance subscale. This subscale includes seven items, Q1 through Q7. According to Thompson and Mazer (2012) this Academic Performance subscale measures the regularity of parent communication occurring in regard to the child’s work ethic and his performance in the classroom, and is particularly focused on items that contribute to the child’s grade. In their studies, Thompson and Mazer (2012) found the academic performance factor scores yield a Cronbach’s alpha of $\alpha = .87$ showing strong test-retest reliability. A positive and significant relationship between academic performance and parent’s satisfaction with teacher support ($r = .31$, $p < .01$, $R^2 = .10$) was found using Pearson correlations. Further evidence of validity is implied by the academic performance importance scores which yield a Cronbach’s alpha of $\alpha = .92$ (Thompson & Mazer, 2012).

The academic performance factor is typically the most objective factor focused on questions about homework assignments, quizzes, and tests that contribute to academic success. This subscale of the PASS included communication scores Q1 through Q7. Since there were five

possible levels of communication across the seven question items the total score is attained by adding Q1 through Q7. The possible range of scores is from 7 to 35. The lowest possible total score of 7 means that a parent indicated *not at all* for each of the 7 items within Academic Performance. The highest possible total score of 35 means that a parent had indicated *about every day* for each of the 7 items (Mazer & Thompson, 2016; Thompson, Mazer, & Grady, 2015).

PASS classroom behavior subscale. The second factor of the PASS is referred to throughout the remainder of this document as the classroom behavior subscale. This subscale includes three items, Q8 through Q10. According to Thompson and Mazer (2012) the classroom behavior subscale measures the regularity of parent communication occurring in regard to problem behaviors such as talking back, playing around, and possible solutions to correct problem behaviors. In their studies, Thompson and Mazer (2012) found that classroom behavior subscale scores yield a Cronbach's alpha of $\alpha = .78$ showing strong test-retest reliability. No significant relationship between classroom behavior and parent's satisfaction with teacher support ($r = .08$, $p > .05$, $R^2 = .01$) was found using Pearson correlations. Further evidence of validity is implied by the classroom behavior importance scores which yield a Cronbach's alpha of $\alpha = .93$ (Thompson & Mazer, 2012).

The PASS classroom behavior subscale includes three communication scores, Q8 through Q10. The sum of these scores is calculated. Since there were five possible levels of communication across these three items, the total possible frequency score ranged from 3 to 15. The lowest possible total score of 3 meant that a parent indicated *not at all* for each of the three items. The highest possible total score of 15 meant that a parent had indicated *about every day* for each of the three items.

PASS - Media Preference

According to Thompson, Mazer, and Grady (2015) parent preferences for communication media are changing. With the ubiquity of the Smartphone and increased wireless access, e-mail in particular is gaining favor with parents who have children in grades K – 12. The second indicator for each of the 16 items on the PASS asks parents about their preferred medium of communication. The purpose of the PASS - media preference indicator is to understand the means by which parents communicate with teachers. According to Daft and Lengel (1989) MRT describes communication media in terms of lean- to- rich as discussed earlier in Chapter Two (Figures 1 and 2). Leaner forms of communication, such as letters, are more asynchronous than other, richer forms which are more synchronous and provide additional clues, such as tone of voice, to decrease ambiguity.

The second part of each item on the PASS begins with the prompt, “The mode of communication I used most was...” (Thompson & Mazer, 2012, p.140). The possible choices for mode of communication were: a personal note/letter = 1; e-mail message = 2; text message = 3; telephone = 4; and face-to-face = 5. These media preferences ranged from leaner, more asynchronous media, to richer, more synchronous media. Since the time frame parents were asked about was one month, they were able to, and often did, select more than one media preference for each item. Frequency counts were conducted for each media preference selection so that the total number for each particular medium would be 16 per survey. Potentially, every one of the five media offered could be selected for each of the 16 items on the PASS. Frequency counts per survey were summed for each group (DPR-SP, DPR-X) of parents (see Figure 8).

Procedures

Superintendent and school principal approvals for this research study were obtained in July 2015, and the study began in September 2015. Since the school has an established SWPBIS program and was focusing its efforts on improving MTSS program delivery, the timing and topic of this study were well-suited to the interests of this school. Prior to PASS survey data collection, this researcher applied for and obtained approval from the Liberty University Institutional Review Board (LU-IRB) to complete this study. Upon receipt of approval by the LU-IRB, survey distribution and collection began. The LU-IRB reviewed the PASS and gave approval, along with a signed consent form, for it to be used (see Appendix C). To ensure privacy, student names and parent surveys were given a survey identification code. This code was used on the PASS survey and for data collection, organization, and analysis.

Setup

The target population was parents of students participating in either an MTSS or SPED intervention program who were using a DPR. As a matter of course, parents of students participating in any intervention program were notified by a school counselor or an administrator, and parents' permission was received prior to placement. Once permission was obtained, the child officially began the MTSS intervention program. Students in the intervention programs were assigned a coordinator (MTSS), or, if the student was an identified Special Education (SPED) student, assigned a case manager. The coordinator or case manager was the primary contact responsible for passing out paper-based DPRs, then collecting, recording, and disseminating the DPR data. The DPR data was collected and reviewed daily, and individual rewards were given to reinforce good behavior when weekly point goals were achieved by each student. The coordinators were responsible for daily and weekly fidelity checks on the

implementation of their programs and student participation. The coordinator checked to ensure students and teachers were participating in handing in and filling out the DPRs on a daily basis.

Coordinators for the MTSS intervention program CICO were selected and assigned by administrative decision, one CICO coordinator per team. Since the school has three grade levels made up of three teams, the end result was nine CICO coordinators school wide. Each CICO coordinator was responsible for a group of up to three students whom they would manage. Students placed in the CICO program were assigned a coordinator to be their homeroom teacher in order to facilitate their checking in and out. Since students report to homeroom twice, once at the beginning of the school day and once at the end, the arrangement worked well for both checking in and checking out.

Coordinators for the MTSS program FSP were teachers whose teaching responsibility was working with their grade- level group of students. Each grade level had one FSP teacher, for a total of three FSP teachers. Each of these three FSP teachers was assigned to a group of no more than 10 students who were identified and recommended by teachers to the administration as possible candidates. Candidates were selected by the administration and SAT for participation in the FSP program. The FSP teacher traveled with their 10 students from class to class. One period per day the teacher met with only the 10 students in the FSP program to review and study the academic material being presented in their academic classes. The FSP teacher travelled with their group of students to each class and was responsible for ensuring the DPRs were being filled out and reviewed with each student.

Each grade level had two case managers for SPED, for a total of six case managers. In each grade, the total number of SPED students was divided equally between the two case managers. Case managers determined through the Planning and Placement Team (PPT) whether

or not to use a DPR. The students who had a DPR were identified by their case manager, who created the indicators for the individual DPR based on the student's IEP and behavioral indicators that were to be tracked. The case manager was the primary contact for the DPR delivery and management. Students in SPED had one period a day, as did the FSP students, during which their SPED case manager worked directly with them on the academic content they were expected to learn. In each program, either the coordinator or the case manager was responsible for monitoring DPRs. This included collecting, reviewing, and providing reinforcement to students based on the DPR data. The DPR data were collected and reviewed daily, and individual rewards were given on a weekly basis when weekly point goals were achieved, in an effort to reinforce good behavior by each student.

Training for Staff, Students, and Parents

When the study commenced, all staff members were trained to use, and had been using, the paper-based DPR. It had been more than five years since the adoption of SWPBIS as a framework for behavior modification research. During the opening day of school (for teachers only), professional development was held for all staff. Staff members were trained in the specific process and expectations for using both DPR types, with emphasis on the electronic DPR-X. The DPR-X was designed to be identical in content to the DPR-SP, so that new teacher learning was reduced to the basic technical process of accessing the hyperlink from the teacher DPR-X spreadsheet (see Appendix G) and filling out the electronic DPR-X form (see Appendix F).

The opening day professional development session was used to explain in detail the rationale for the DPR-X, as well as the alignment of the DPR-X with district goals for improving parent involvement and enhancing MTSS intervention programs. Expectations for teachers

concerning policies, procedures, and practices were reviewed (see Appendices E-J). Both dependent and independent practice was used to guide teachers through the process of locating and filling out their students' DPRs. This professional development training included specific instructions about the role of each individual and his specific role in the implementation of the DPR-SP and DPR-X. Teachers were also trained to create their own calendar reminders so that they would know when they needed to fill out the DPR-X. Teachers asked questions pertaining to locating and interpreting student data, as well as how to access teacher spreadsheets by means of Google Drive. These questions were answered by the presenter.

Beginning in September 2015, all students who were currently using a DPR were taught the expectations for use of the DPR and the purpose of the DPR. Students in each program were informed about the reinforcements that could be earned for good behavior and achieving weekly point goals. As new students entered one of the programs, they were trained to use either the DPR-SP or the DPR-X by their coordinator or case manager. The students using the DPR-X were trained to use their school- issued Chromebooks to access their own student DPR-X website. The web-link was provided on a student spreadsheet that was shared with them in their individual Google Drive account. Each student was trained to open the website; to save it as a "favorite"; and to read, manipulate and interpret the table. Each student trained on the DPR-X was reminded that he could access this website from any mobile device. He was also instructed to review this DPR-X website with his3 parents as consistently as possible.

Parents of students using the DPR-X were contacted by the school and informed about the use of the DPR-X by their child and their teachers. Parents were asked to provide an existing Gmail account so that their child's DPR data could be shared securely. Parents who did not have a Gmail account were offered training and given instructions on how to create a Gmail account.

All parents were given instructions and offered training on how to access and interpret the DPR-X website with their child. Parents of students in the DPR-X group were invited to participate in online training and were offered assistance and support for using the DPR-X with their mobile devices and ways to make sense of the DPR-X data so that it would be more meaningful and helpful to them. Parents were provided contact information for their child's DPR coordinator as the point of contact for further questions.

Coordinator and Student Protocols

Coordinators who met with students using the DPR-SP each morning would provide the DPR in paper form when the student met with them in homeroom. The student would then carry the paper-based DPR to each class and hand it in to his teacher. Teachers would fill it out at the end of class and hand it back to the student. Coordinators working with students using the DPR-X would meet with their students during homeroom and review the data from the DPR-X website with their students. Teachers who had students using the DPR-X were provided an individualized teacher DPR-X spreadsheet aligned with their own teaching schedule. This spreadsheet was organized by class period and contained links to every student in every class period that was using a DPR-X (see Appendix G).

The number of students in each class period who were using the DPR-X varied from class to class and from teacher to teacher. Some teachers had no students using the DPRs, and some teachers had many students using the DPRs. Teacher spreadsheets were created and shared using Google sheets (see Appendix D), a product of GAFE which was accessible to teachers within their individual Google Drive account. All teachers were sent an optional calendar reminder item so they would remember to fill out the DPR-X each day.

Students in the MTSS intervention programs FSP or CICO followed the procedures outlined by Crone, Hawken, and Horner (2010). Students in these programs reported to a homeroom location where indicators were reviewed, point goals were set, encouragement was given, and a reminder of the incentives for achieving point goals on the DPR was given to the student. Students worked toward their choice of incentives by meeting weekly goals (see Appendix J). When daily point goals had been achieved, students were awarded the prizes or privileges for which they had been working that week (Crone, Hawken, & Horner, 2010). The students in the DPR-SP group brought their DPR to each class and handed it to the teacher to be filled out at the end of each class. DPRs were returned at check-out and reviewed with the coordinator before being sent home with the student. Students in the DPR-X groups did not bring the DPR to each class, but did receive feedback from teachers who entered the DPR data using the electronic form, gave the student feedback, and submitted the form at the end of the class. The DPR-X data were now instantly accessible by students, teachers, and parents who had shared access to the website.

Coordinators of the DPR-X groups were given a master electronic spreadsheet containing hyperlinks to each student's DPR-X website and to his electronic DPR-X. The DPR-X website displayed DPR data and was shared with the student, the parents, the coordinator, and the grade level administrator. Coordinators for the DPR-X group used a computer or Chromebook to review the DPR points and provide encouragement. Each coordinator maintained contact with the CICO supervisor who helped support the issuing of incentives and oversee the program.

Students involved in the MTSS program FSP would work for daily and weekly incentives as arranged for by their FSP teacher. Each grade level had one FSP teacher who traveled from class to class with his 10 FSP students in order to supervise them in the regular education

classroom. One period a day, the FSP teacher took students to their own room to work on homework and review the academic content for clarity. The FSP teachers used the DPRs to provide their own weekly incentives , which were very much like the rewards offered to students in the CICO program. Since the 10 students all traveled together to each academic class, they operated more like a team than did the students in CICO, who were also using a DPR. This situation enabled FSP teachers to use peer pressure to obtain the cooperation of students in obtaining their weekly goals, so that their group could receive rewards. The FSP teacher using the DPR-X was given an electronic spreadsheet with hyperlinks to access the DPR-X data, and the DPR-X website for each of his students. The FSP teachers would tally the DPR points each day and review their students' progress with them daily and weekly to determine any rewards.

Students involved in a SPED, and who used either a paper or an electronic DPR, met with their case manager one period a day, as did students in the FSP program. These students would use this time to review their academic work as well as to review their DPR. Students in SPED were given a more individualized plan for behavior indicators and incentives. Students were offered incentives very similar to those offered in CICO. Case managers were at liberty to determine appropriate timeframes within which to reinforce each individual's behavior. Some were eligible to receive rewards every 10-15 minutes. Others could receive rewards every class period. Others still could earn rewards once daily or weekly. Students met with their case manager at various times throughout the day and would receive feedback about their performance at those times.

All students using a DPR were encouraged to share the DPR information with a parent or guardian at home each evening; however, there were no data being used to track whether or not parents actually viewed the DPRs.

Parent PASS Participation

Before data collection of the PASS survey began, LU-IRB approval was obtained. Then, students were given survey packets, containing signed consent forms coupled with the PASS survey, to take home (see Appendix B). A website with access to the consent form and a link to the PASS survey made into a GAFE form was also used to collect parent responses. All parents of students using a DPR ($n=66$) were sent a letter asking them to participate in the PASS survey during a parent conference night. During parent conference night tables were set up in the school's main entrance, where parents could take the PASS survey. While many parents who attended conferences did participate in the PASS survey ($n = 8$), most of the PASS surveys collected were returned from home by students ($n = 32$) with only a few parents participating in the survey online ($n = 3$). The total number of PASS surveys returned ($n = 43$) was reviewed and organized to create the final list of matched subjects ($N=40$) used in this study. Surveys were collected and reviewed for missing data. On occasions when there was missing data, the parent was contacted and asked to provide the missing answers by phone. Incomplete surveys were not used as part of this study. According to Gall et al. (2007) the minimal sample size ($n = 32$) is adequate for a hypothesis test using $\alpha = .05$ level of significance, and a statistical power of .70.

All collected PASS survey data from each participant ($N = 45$) were scanned for completion and then transferred to a spreadsheet for advanced analysis using SPSS. The data were stored securely and backed up in password-protected accounts. The hard copies of the surveys are being stored in a secure location for the next three years, as determined by the LU-IRB. A brief description of the data analysis will follow with a more thorough analysis and interpretation completed in Chapters Four and Five.

Data Analysis

In an effort to answer the research question on parent involvement, four null hypotheses were posed. The first three null hypotheses correspond to PASS - Communication scale data. The fourth null hypothesis corresponds to PASS - Media preference data. For PASS - Communication scale scores, total communication scores were used, including all 16 questions on the PASS survey. For each Communication subscale, Academic Performance subscale and Classroom Behavior subscale, the scores were extracted and summed for each group (DPR-SP, DPR-X) before comparison using an independent samples *t* test. For PASS - Media preference scores, frequency counts were calculated as sums for each group. These frequency counts were compared between groups using a chi-square test with a 2 x 4 contingency table.

PASS - Communication Scale: Independent *t* Test

The communication scores for each item on the PASS were coded and entered into SPSS as follows: not at all = 1; once or twice =2; about once a week =3; several times a week = 4; about every day = 5 (Malecki & Elliot, 1999). The highest possible total score was 80, indicating that parent-teacher communication occurs every day regarding all 16 items. The lowest possible total score was 16, indicating no communication at all with the child's teacher about all 16 items. There were no reverse scores used in the PASS (Thompson & Mazer, 2012). Since the PASS is made up of Likert-type scales (see Appendix A) that are limited to values ranging from one to five, the resulting scale data was analyzed using the sum of scores for each communication score. Larger sums and means are indicative of greater frequency of parental involvement over all 16 items.

According to Gall et al. (2007) a minimum sample size of 40 subjects was needed for an independent *t* test with ($\alpha = .05$) significance to achieve statistical power (.7) to detect a large

effect size. The number of parent participants ($N = 45$) used for this study surpasses the minimum requirements. The data sets for the PASS - Communication scale, Academic Performance, and Classroom Behavior subscales were analyzed using IBM's Statistical Package for the Social Sciences (SPSS) version 23. According to Howell (2011), examining the dispersion of the data and screening for errors prior to conducting in-depth analysis was beneficial. All survey data was initially screened for missing item responses and removed as discovered. Descriptive data were used to examine the dispersion of the data sets concerning their mean and standard deviation and visually examined using boxplots and histograms. As seen earlier, Table 3 describes the assumption tests and statistical tests used in this study.

An independent samples t -test was used for the first three hypotheses to compare mean scores in order to determine whether there was a significant difference between groups. The t -test is considered a robust test against the normality assumption (Rovai, Baker, & Ponton, 2013; Rasch, Teuscher, & Guiard, 2007). For this reason, the researcher used the t test even in cases where the normality assumptions were not found tenable. Since the universal null hypothesis H_01 was tested along with two subscales (H_02 and H_03) a total of three t tests were run. In order to reduce family-wise error and decrease the possibility of a type I error, a Bonferroni correction was used, $\alpha/n = (.05/3)$ to set a more conservative p value $\alpha = .02$ (Armstrong, 2014). According to Green and Salkind (2011) the independent t test uses both a grouping variable and a testing variable. The grouping variable in this study was DPR type, paper or electronic. The test variable was communication score. According to Rovai, Baker, and Ponton (2013) the independent samples t test is a robust parametric test used to examine the mean scores between two groups to find whether they are significantly different. The assumptions, required for the independent

samples t test, were evaluated prior to conducting each t test and are reported in the results section of Chapter Four.

PASS - Media Preference: Chi Square Test

Hypothesis four was examined using a chi-square analysis in order to compare preferred mode of communication by group, DPR-SP versus DPR-X. The PASS - media preference data was analyzed as categorical data using the total number of selections of each media type per survey. Participants were able to indicate more than one preferred mode for each item so the data was collected by item with the total number of times each mode was selected for all 16 items. Each media type, a) *letter*, b) *text message*, c) *e-mail*, d) *phone*, and e) *face to face*, had the potential of being selected 16 times per survey. Calculating the sum total of each mode by group allowed for a proportion analysis by group for each selected mode of communication. Since multiple modes were often selected for each of the 16 items data analysis was completed by calculating the sum total of times each preferred mode was selected and compared by group, DPR-X and DPR-SP.

Assumption Tests

Prior to conducting quantitative tests, certain assumptions were evaluated using various statistical tests (see Table 3).

Table 3

<i>Test Items Included in the Statistical Analysis Results</i>		
Testing	Reported As	Purpose
Normality	Histogram	The histogram is used to visually depict empirical distributions of variables and to ensure an approximately normal distribution (Warner, 2013).
	Boxplot	Like histograms boxplots show whether the data distribution is normal or skewed, but also show any outliers (Field, 2005). Outliers are extremely high or low scores that can influence the mean in a certain direction (Warner, 2013).
	Kolmogorov-Smirnov and Shapiro-Wilk tests	These tests are used to statistically verify the assumption that score distributions are normally distributed. A non-significant result ($p < .05$) affirms normal distribution (Green & Salkind, 2011).
Variance	Levene's test	This test is used to verify the assumption that the variance of each group's data is equivalent. A non-significant result ($p < .05$) affirms equal variance (Field, 2005).
Correction	Bonferroni Correction	The Bonferroni correction is used to correct for family-wise error rates and the possibility of a Type I error when multiple statistical tests are used (Armstrong, R. A., 2014).
Difference	Paired Samples t test	Parametric test for differences between groups calculating whether the difference scores are significantly different from zero. (Green & Salkind, 2011)
Relationship	Chi-square test	A nonparametric procedure to determine the relationship between two categorical variables comparing frequencies in specific categories with frequencies that would be expected simply by chance (Field, 2005).

Certain assumptions are inherent in any data analysis and should be found tenable for accurate and reliable interpretation of test results (Field, 2005). The following section reviews the assumptions and associated tests used prior to conducting the independent samples t tests and the chi-square test. According to Rovai et al. (2013) the independent samples t test is a parametric test used to evaluate whether means of two independent groups are significantly different. Independent t tests involve the following assumptions, namely, Random Assignment, Independence, Level of Measurement, Normality and Outliers, and Homogeneity of Variance

(Field, 2005; Rovai, Baker, & Ponton, 2013). According to Field, 2005, there are two assumptions that should be evaluated before proceeding with a chi-square test, a) the Level of Measurement assumption and b) an Expected Count assumption. These assumptions are discussed here in general and then specifically within the context of each hypothesis.

Random Assignment

In this study the assumption of random assignment was satisfied by design. As outlined earlier in Chapter Three (see Figure 4) two groups were created and then randomly assigned, one as the treatment, and the other, by default, as the control group. In order to create two groups using intact clusters of students, all students using DPRs were identified and then placed in one of two heterogeneous groups. These two heterogeneous groups were made up of intact clusters of students from each program and grade level. These two groups containing approximately equal numbers of students were then randomly assigned, one to the treatment ($n = 32$) DPR-X and the other to the control group ($n = 34$) DPR-SP. Therefore, the random assignment assumption was tenable.

Independence

The assumption known as *independence* means that scores are collected from groups that are independent of each other (Field, 2005; Rovai, Baker, & Ponton, 2013). Like the assumption of random selection, in this study the assumption of independence was satisfied by design. Parents were surveyed from two independent groups. Parent survey scores for DPR-SP group were in no way dependent on the scores of parents in the DPR-X group (Green & Salkind, 2011). The scores obtained were independent of each other and therefore the assumption of independence was tenable.

Level of Measurement

The level of measurement assumption for the independent t test requires that the dependent variables are continuous and measured at the interval or ratio scale. The assumption also requires a categorical variable with two groups, one treatment and one control (Rovai, Baker, & Ponton, 2013). The data collected to measure the communication scores was collected as Likert scale data indicating levels of parent communication frequency. The communication score ranging from 1 = “not at all” through 5 = “About every day” was considered a continuous variable, summed and calculated as ratio scale data. The Likert scale options required parents to indicate how many times they had made contact with their child’s teacher in the past month.

The level of measurement assumption for the chi-square test requires only that the variables are categorical. The test only evaluates proportions of each categorical variable to find whether or not they differ significantly from expected proportions (Green & Salkind, 2011). Hypothesis four meets this assumption using frequency counts of each PASS - Preferred Mode of communication related to its group DPR-SP or DPR-X.

Expected Count

The level of measurement for a chi-square analysis can be categorical in nature, but these categorical variables should be used along with raw frequency counts. Using the raw frequency counts, expected frequencies for each variable are calculated statistically. For the chi-square test to be valid, these expected frequency counts should be greater than 5 for each cell, and the overall frequency counts ($N > 30$) should be large (Field, 2005; Rovai, Baker, & Ponton, 2013).

Normality and Outliers

Normality refers to the normal distribution of empirical data being shaped like a bell curve. According to Field (2005) ideal normal distributions are symmetrical, having no skew,

either positive or negative, and no kurtosis. Outliers are extremely high or low scores that influence the mean, especially in smaller samples (Warner, 2013). According to Field (2005) outliers can bias the mean and, therefore, the analysis of the data. The assumption of normality for each set of communication scores was visually evaluated; first, using a boxplot to eliminate outliers; then, using a histogram; and then statistically calculated using the Shapiro-Wilk test (Warner, 2013; Green & Salkind, 2011).

The boxplot was used to visually depict empirical distributions of variables and to ensure an approximately normal distribution (Warner, 2013). Boxplots were conducted for each factor to show whether the data distribution was normal or skewed, and to identify any outliers (Field, 2005). Scores which were identified as outlying scores--those falling outside of the interquartile range-- were removed. With outliers removed the normality statistic was calculated using the Shapiro-Wilk test (Warner, 2013; Green & Salkind, 2011).

The following caveats identified by Rovai et al. (2013) regarding the assumption of normality as they apply to the independent t test were applied by the researcher. Since sample sizes were approximately equal in each case, non-normality did not interfere with the use of the independent t test. The t test is robust against normality assumptions even with standard deviation scores up to 2.00 (Rasch, Teuscher, & Guiard, 2007; Rovai, Baker, & Ponton, 2013). An independent t test was used for hypotheses one through four to compare the difference between communication scores of each group to determine whether the mean value for one group (DPR-SP) is significantly different than the mean value for the second group (DPR-X).

Homogeneity of Variance

Variance within a set of data refers to the average spread of the data set. The assumption of homogeneity of variance is that the spread of the data for each group is similar to the spread of

the data for the other group (Field, 2005; Rovai, Baker, & Ponton, 2013). The Levene's test statistic is used to evaluate the hypothesis that the variance of data between groups is equivalent. A significant statistic ($< .05$) indicates the variance between groups is significantly different and that the assumption has been violated. The Levene's test statistic is produced by SPSS as part of the independent t test output and is therefore used to decide which row of statistics is used in the discussion of results for each of the following hypotheses. When the Levene's statistic was significant, equal variance was not assumed, and when Levene's test was not significant $p > .05$ equal variance was assumed (Levene, 1960; Field, 2005).

Chapter Summary

In this chapter the research design used for this study was described. The stated purpose was to compare two independent groups of parents based on their PASS survey scores. The research question and null hypothesis were stated, followed by a description of the parent participants and context of this research study. The setting was described including a description of the school culture and climate aligned with the SWPBIS model. A description of the instrument used for this study was provided along with the reliability and validity statistics provided in the literature. A detailed description of the procedures used to organize and complete this study was provided in order that this research study may be replicated with accuracy. Finally, a descriptive overview of the data analysis and assumption testing was provided, highlighting the test types, assumptions, and the logic of the testing that is described in Chapter Four.

CHAPTER FOUR: FINDINGS

The purpose of this study was to compare communication scores of parents whose children use paper daily progress reports with communication scores of parents whose children use electronic daily progress reports. The purpose of this chapter is to provide an overview of the descriptive data followed by a more specific analysis of each null hypothesis and the findings. The research question and hypotheses are reviewed followed by descriptive statistics of the overall survey data. This is followed by the results section in which the particulars of each hypothesis are explained. The results section is organized by hypothesis. Assumption tests for each statistical test are explained and reviewed along with the results of each hypothesis. The results section shows tables and charts either confirming or denying the assumptions. Finally, the results of each independent t test are stated. Effect sizes were calculated for each null hypothesis and its corresponding t test. For hypothesis four, the assumptions for the chi-square test are reviewed and described prior to a statement of the results.

This study compares parent involvement between parents whose children use a paper daily progress report and parents whose children use an electronic daily progress report. The standard practice group (DPR-SP) used the more asynchronous medium of paper, and the treatment group (DPR-X) used the more synchronous electronic medium. The ubiquity of wireless communication technology has made electronic data collection and dissemination a secure method for communication with parents (Data Quality Campaign, 2015; National School Public Relations Association, 2011). Not only is an electronic version of the DPR a possibility, it has become a secure and viable option through the use of GAFE (Google, 2015; Heath, Maghrabi, & Carr, 2015). Parents have made their preference for electronic communication

known in various surveys and research studies. Accordingly, the following research question framed this study.

Research Question

RQ1: Is parental involvement effected differently for parents whose children use paper-based daily progress reports compared to parents whose children use electronic daily progress reports as measured by the Parental Academic Support Scale (PASS) survey?

Null Hypotheses

H₀₁: There is no significant difference in Communication scale scores between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

H₀₂: There is no significant difference in Academic Performance subscale scores between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

H₀₃: There is no significant difference in Classroom Behavior subscale scores between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

H₀₄: There is no significant difference in Media Preference selection between parents of students using paper daily progress reports and parents of students using electronic daily progress reports as measured by the Parental Academic Support Scale (PASS).

Descriptive Statistics

PASS - Communication Scale

In order to determine the internal consistency and reliability of the PASS, the Cronbach's alpha test was performed. The resulting Cronbach's $\alpha = .95$ shows the test-retest reliability for

the PASS - Communication scale is strong. PASS - Communication scale data were collected and summed for each group with the minimum, maximum, mean, and standard deviation for each group displayed in Table 4. The communication score range of possible scores is from 16 through 80. A minimum score of 16 indicates that the parent selected “Not at all” for every communication item on the PASS survey. The maximum score, 80 indicates that the parent selected “About every day” for every communication item on the PASS survey. Therefore, in a normal distribution the mean score ($M = 48$) would indicate a frequency value of “Once a week.”

Table 4

<i>PASS-Communication Scale Scores by Group</i>						
	Group	<i>N</i>	Min.	Max.	<i>M</i>	<i>SD</i>
PASS-Communication	DPR-SP	21	16	63	25.29	13.29
	DPR-X	24	17	68	29.08	11.8
Academic performance	DPR-SP	21	7	34	12.2	6.3
	DPR-X	24	7	33	14.21	6.02
Classroom behavior	DPR-SP	21	3	15	5.2	3.4
	DPR-X	24	3	15	6.6	3.2

Of the parent surveys returned in each group, the minimum score found in the DPR-SP group ($n = 21$) was 16, while the minimum score in the DPR-X group ($n = 24$) was 17. The maximum score in the DPR-SP group was 63 while the maximum score in the DPR-X group was 68, indicating higher communication scores. The mean score of the control group ($M_{sp} = 25.29$; $SD_{sp} = 13.29$) was lower than the mean score of the treatment group ($M_x = 29.08$; $SD_x = 11.80$). Parent scores on the Academic Performance subscale had a possible range from 7 to 35 with the maximum score in the DPR-SP group of 34 and the maximum score in the DPR-X group 33. The mean scores ($M_{sp} = 12.2$, $M_x = 14.2$), were consistent with overall PASS - Communication scores. Parent scores on the classroom behavior subscale had a possible range from 3 to 15 with the maximum score in both groups being 15. The mean scores, ($M_{sp} = 5.2$, $M_x = 6.6$) were also

consistent with overall PASS - Communication scores. The mean score across the PASS - Communication scale, and the two subscales, were higher for parents in the DPR-X group than for parents in the DPR-SP group.

The parent survey data were further explored to find the mean for each individual question for all survey participants by group. The following table shows parent communication scores for each question (see Table 5) as well as mean scores for each of the two subscales. A subscale mean score greater than two indicates an average frequency of parent communication falling between “once or twice” and “once a week” in the past month. Academic Performance subscale mean score was lower in the control group ($M_{sp} = 1.74$; $SD_{sp} = .90$) than the mean score in the treatment group ($M_x = 2.03$; $SD_x = .90$). Classroom behavior subscale mean score was likewise lower in the control group ($M_{sp} = 1.73$; $SD_{sp} = 1.13$) than the mean score in the treatment group ($M_x = 2.20$; $SD_x = 1.05$).

Table 5

PASS-Communication Scores by Question

PASS Survey Item	DPR-SP			DPR-X		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Q1. My child's grades in the class	21	2.04	1.07	24	2.25	0.94
Q2. Why my child has a missing assignment	21	1.67	1.24	24	1.92	0.65
Q3. How my child can improve his/her grade	21	1.81	0.93	24	2.29	1.12
Q4. Why my child received the grade he/she did	21	1.50	1.21	24	2.21	1.02
Q5. Why my child was not completing assignments	21	1.62	1.10	24	1.92	1.14
Q6. Learning more about homework assignments	21	2.00	1.50	24	2.00	1.22
Q7. A question I had about an assignment	21	1.60	1.10	24	1.63	0.97
Academic Performance (subscale 1)	21	1.74	0.90	24	2.03	0.86
Q8. Solutions to address my child's behavior in class	21	1.81	1.20	24	2.33	1.09
Q9. My child talking back to the teacher	21	1.62	1.10	24	2.13	1.30
Q10. My child goofing off in class	21	1.76	1.22	24	2.13	1.12
Classroom Behavior (subscale 2)	21	1.73	1.13	24	2.20	1.05
Q11. My child's ability to make/maintain friendships with peers	21	1.50	1.10	24	1.50	0.98
Q12. How my child was not bringing materials to class	21	1.50	1.21	24	1.54	0.78
Q13. My child being picked on by classmates	21	1.20	0.70	24	1.33	0.92
Q14. A major classroom behavioral incident (fight, etc.)	21	1.30	0.90	24	1.50	0.93
Q15. A temporary health issue my child is experiencing	21	1.30	0.90	24	1.25	0.61
Q16. A major physical health issue my child is experiencing	21	1.20	0.87	24	1.21	0.72
Total Mean Q1-Q16	21	1.58	0.83	24	1.82	0.74

PASS - Media Preference

PASS - Media Preference data were collected for each of the five media types across all 16 items. These data, including total frequency counts by group, are displayed in Table 6. Combined frequency counts of all parent selections of preferred mode indicates the least frequently selected mediums were also the leanest media, namely text messages and letters. The medium most frequently selected by parents was phone, which was selected 177 times. Parents selected e-mail, their second-most preferred means of communicating with teachers, 156 times,

confirming findings by Thompson et al. (2015). The richest media, face to face, was third-ranked in frequency and was selected only 49 times.

Table 6

PASS - Media Preference by Group

DPR Type	Letter	Text	e-mail	Phone	Face to face
DPR-X	7	2	84	108	18
DPR-SP	8	3	72	69	31
Total	15	5	156	177	49
Z Scores	-0.5	-1.73	-1.10	-3.0	-1.55

Results

Hypotheses one, two, and three were evaluated using an independent samples t test. Hypothesis four was evaluated using a chi-square test. Prior to evaluating the results of the independent t test the assumption of homogeneity of variance was considered using Levene's test for homogeneity of variance. The Levene's test determined whether equal variance should be assumed as well as the p value to be used for each independent t test. The results of each independent t test are provided in Table 8 and are discussed in the following sections corresponding to each hypothesis. The results of the chi-square test are provided in Table 12 with expected counts for each group.

The results section is organized by hypothesis, each one accompanied by a summary of each of the assumptions, along with pertinent graphs and tables. The test result is then stated with corresponding effect size and observed power. The decision whether to reject or fail to reject the null hypothesis is stated at the end of each section, and is based upon test outcome.

The independent t test results are summarized in Table 8. Since the universal null hypothesis H_01 was evaluated along with two subscales (H_02 and H_03) a total of three t tests were run. In order to reduce family-wise error and decrease the possibility of a type I error, a Bonferroni correction was used, $\alpha/n = (.05/3)$ to set a more conservative p value $\alpha = .02$ (Armstrong, 2014).

Hypothesis One: PASS - Communication Scale

Null hypothesis one states that there is no significant difference in the communication scores between parents of students using paper daily progress reports and parents of children using electronic daily progress reports. An independent samples t test was conducted to test this null hypothesis. Since three independent t tests were conducted, a Bonferroni corrected alpha level of $\alpha = .02$ was used to determine significance (Armstrong, 2014; Rovai, Baker, & Ponton, 2013).

H_01 assumptions. In this study the assumption of random assignment was found to be tenable by design. As outlined earlier in Chapter Three (see Figure 4) two groups were created and then randomly assigned, one as the treatment group, and the other, by default, as the control group. The assumption known as *independence* means that scores are collected from groups that are independent of each other (Field, 2005; Rovai, Baker, & Ponton, 2013). Like the assumption of random selection, in this study the assumption of independence was found to be tenable by design, with independent groups of parents providing survey responses. The level of measurement assumption for the independent t test requires that the dependent variables be continuous and measured at the interval or ratio scale. The data collected to measure the communication scores were collected as Likert scale data indicating levels of parent communication frequency. Since the communication response scores ranging from 1= (*Not at*

all) through 5= (About every day) were calculated and summed as a continuous variable, the level of measurement assumption was considered tenable.

The assumption of normality as well as outliers was evaluated by means of boxplots. The data sets for PASS-Communication scores were evaluated using boxplots to identify and extract outliers from each group. The resulting boxplots show normal distributions for both groups. The Shapiro-Wilk statistic was determined. The assumption of normality was found to be tenable at the .05 alpha level (Table 7).

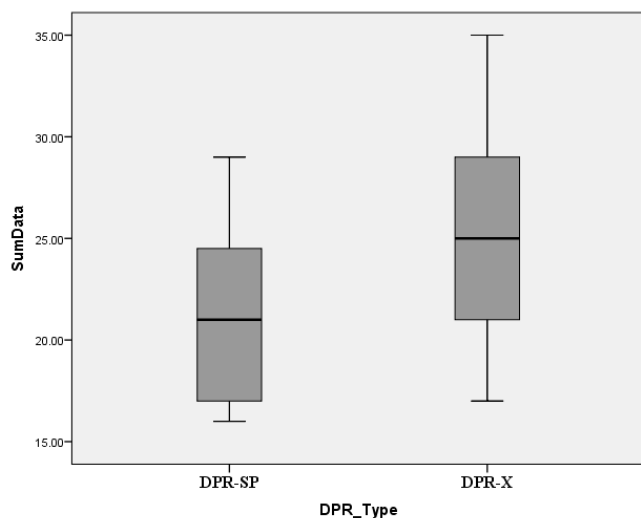


Figure 5. Boxplot for Communication Scores by Group ($n_{sp} = 19$, $n_x = 21$).

Table 7

<i>PASS - Communication Scale Scores Normality</i>			
		<i>Shapiro-Wilk</i>	
<i>DPR type</i>		<i>df</i>	<i>Sig.</i>
Communication Scale	DPR - SP	19	.04
	DPR-X	21	.55

Variance within a set of data refers to the average spread of the data set. The assumption of homogeneity of variance is that the spreads of the data for each group are similar or equivalent (Field, 2005; Rovai, Baker, & Ponton, 2013). The Levene's test (Table 8) statistic is used to evaluate the hypothesis that the variance of data between groups is equivalent. Levene's test for homogeneity of variance, $F(1,38) = .10, p = .76$ indicated that equal variance should be assumed.

Table 8

<i>Levene's test of homogeneity of variance</i>			
	<i>equal variance</i>	<i>Levene Statistic</i>	<i>Sig. (p = .05)</i>
PASS - Communication scale	assumed	.095	.760
Academic Performance	assumed	3.80	.060
Classroom Behavior	not assumed	6.70	.014

* $p < .01$

Independent *t* test. An independent samples *t* test (Table 9) was conducted to examine differences in PASS - Communication scores between parents whose children use paper daily progress reports and parents whose children use electronic daily progress reports. Parents whose children use electronic daily progress reports ($M = 29.08; SD = 11.80$) were significantly more likely than parents whose children use paper daily progress reports ($M = 25.29; SD = 13.29$) to

communicate with their child's teacher, $t(38) = -2.54, p = .015$, two-tailed. Using estimates by Cohen (1988) the effect size ($d = .81$) was large. The observed power was .70, indicating that there is a 70% likelihood that the null hypothesis was correctly accepted or rejected. The 95% confidence interval for the mean difference between the two groups was -7.13 to -.81. The researcher rejected the null hypothesis.

Table 9

PASS- Communication Scale Independent t test summary ($\alpha = .02$)

	<i>t</i>	<i>df</i>	<i>Sig.</i>	<i>Mean Difference</i>	<i>d</i>
PASS Total	-2.54	38	.015*	-3.97	.81
Academic Performance	-.802	38	.427	-.85	.25
Classroom Behavior	-3.28	33.64	.002*	.72	.96

* $p < .02$

Hypothesis Two: Academic Performance

Null hypothesis two states that there is no significant difference in the communication scores on Academic Performance between parents whose children receive paper progress reports and parents whose children receive electronic progress reports. An independent samples t test was conducted to test this null hypothesis. Since three independent t tests were conducted a Bonferroni corrected alpha level of $\alpha = .02$ was used to determine significance.

H₀2 assumptions. In this study the assumption of random assignment was found to be tenable by design. As outlined earlier in Chapter Three (see Figure 4) two groups were created and then randomly assigned, one as the treatment, and the other, by default, as the control group. The assumption known as *independence* means that scores are collected from groups that are independent of each other (Field, 2005; Rovai, Baker, & Ponton, 2013).

Like the assumption of random selection, in this study the assumption of independence was found to be tenable by design, with independent groups of parents providing survey responses. The level of measurement assumption for the independent t test requires that the dependent variables are continuous and measured at the interval or ratio scale. The data collected to measure the communication scores were collected as Likert scale data indicating levels of parent communication frequency. Since the communication scores ranging from 1 = (*Not at all*) through 5 = (*About every day*) were calculated and summed as a continuous variable, the level of measurement assumption was considered tenable.

Thompson and Mazer (2012) have analyzed these five factors for reliability. In their review of the reliability and validity of 21 instruments used in instructional communication research, Mazer and Graham (2015) included the PASS. They state, “confirmatory factor analysis supported the five-factor structure, providing evidence of factorial validity” (p. 222). Using factor analysis, Thompson and Mazer (2012) found that the five factors identified in their study, along with correlations between them, offer initial validity evidence for the PASS.

The data sets for Academic Performance subscale were evaluated using boxplots to identify and extract outliers from each group. The resulting boxplots (Figure 6) show approximate normality for the DPR-X scores and a positive skew for DPR-SP scores with equal sample ($n_{sp} = 20$, $n_x = 20$) sizes. The Shapiro-Wilk statistic indicates normal distribution for the DPR-X data. Normality for both groups was assumed to be tenable at the .05 alpha level (see Table 10).

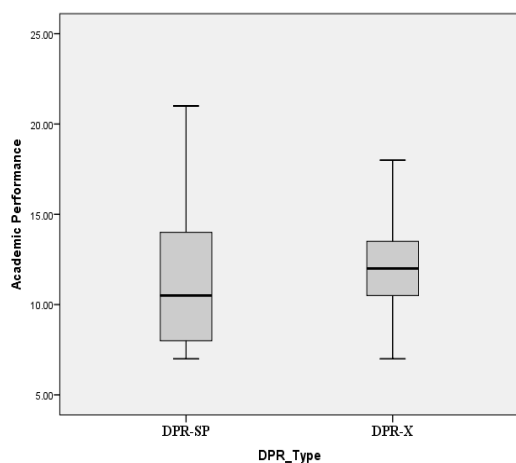


Figure 6. Boxplot for Academic Performance by Group ($n_{sp} = 20$, $n_x = 20$)

Table 10

PASS-Academic Performance Normality

		<i>Shapiro-Wilk</i>	
<i>DPR type</i>		<i>df</i>	<i>Sig.</i>
Academic Performance	DPR - SP	20	0.03
	DPR-X	20	.31

Variance within a set of data refers to the average spread of the data set. The assumption of homogeneity of variance is that the spreads of the data for each group is similar or equivalent (Field, 2005; Rovai, Baker, & Ponton, 2013). The Levene's test statistic is used to evaluate the hypothesis that the variance of data between groups is equivalent. Levene's test (see Table 7) for homogeneity of variance, $F(1,38) = 3.8$, $p = .06$ indicated that equal variance should be assumed.

Independent *t* test. An independent samples *t* test was conducted to test the null hypothesis that there is no significant difference in Academic Performance subscale scores between parents whose children use paper daily progress reports and parents whose children use

electronic daily progress reports. Parents whose children use paper daily progress reports ($M = 11.10$, $SD = 3.90$, $n = 20$) were just as likely as parents whose children use electronic daily progress reports ($M = 11.95$; $SD = 2.70$, $n = 20$) to communicate with teachers about their child's academic performance, $t(38) = -.80$, $p = .43$, two-tailed. Using effect size estimates by Cohen (1988) the effect size ($d = .25$) was small. The observed power was also small .12, indicating that there is a 12% likelihood that the null hypothesis was correctly accepted or rejected. The 95% confidence interval for the mean difference between the two groups was -2.99 to 1.30. The researcher failed to reject the null hypothesis.

Hypothesis Three: Classroom Behavior

Null hypothesis three states that there is no significant difference in the communication scores on Classroom Behavior between parents whose children receive paper progress reports and those whose children receive electronic progress reports. An independent samples t test was conducted to test this null hypothesis. Since three independent t tests were conducted, a Bonferroni corrected alpha level of $\alpha = .02$ was used to determine significance.

H₀₃ assumptions. In this study the assumption of random assignment was found to be tenable by design. As outlined earlier in Chapter Three (see Figure 4), two groups were created and then randomly assigned, one as the treatment group, and the other by default as the control group. The assumption known as *independence* means that scores are collected from groups that are independent of each other (Field, 2005; Rovai, Baker, & Ponton, 2013). Like the assumption of random selection, in this study the assumption of independence was found to be tenable by design with independent groups of parents providing survey responses. The level of measurement assumption for the independent t test requires that the dependent variables are continuous and measured at the interval or ratio scale. The data collected to measure the

communication scores were collected as Likert scale data indicating levels of parent communication frequency. Since the communication response scores ranging from 1 (*Not at all*) through 5 (*About every day*) were calculated and summed as a continuous variable, the level of measurement assumption was considered tenable.

The data sets for the Classroom Behavior subscale were evaluated using boxplots to identify and extract outliers from each group. The resulting boxplots (Figure 6) show positive skew for both groups, with unequal sample sizes in each group. After removal of outliers from each group, fewer participants remained in the DPR-SP group ($n = 19$) than in the DPR-X group ($n = 24$). The Shapiro-Wilk statistic (Table 11) shows significant difference from a normal distribution in both the DPR-SP data and the DPR-X data. The t -test is considered a robust test against the normality assumption (Rasch, Teuscher, & Guiard, 2007). For this reason, the researcher continued with the analysis even though the assumption of normality was found not to be tenable at the .05 alpha level.

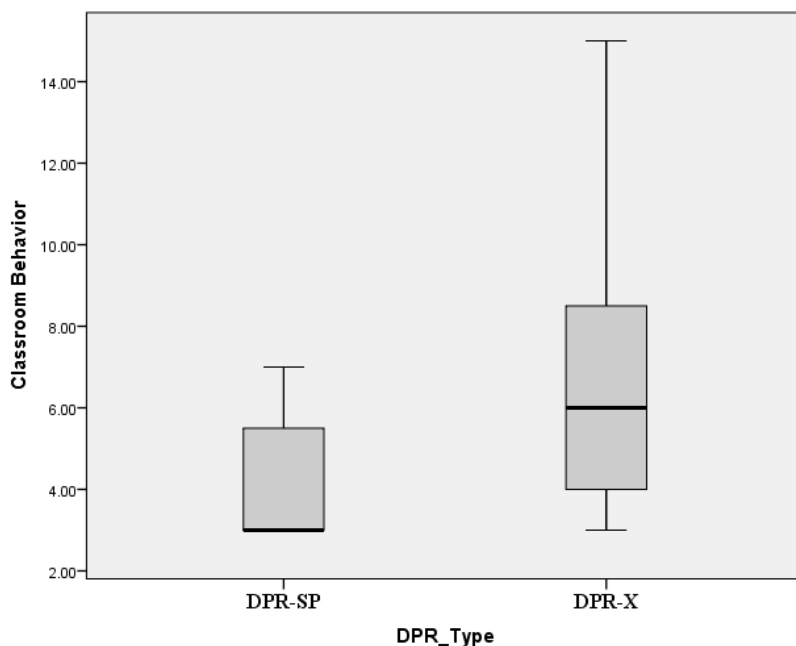


Figure 7: Boxplot for Classroom Behavior by Group ($n_{SP} = 19$, $n_X = 24$)

Table 11

PASS-Classroom Behavior Normality

		<i>Shapiro-Wilk</i>	
		<i>df</i>	<i>Sig.</i>
Classroom Behavior	DPR - SP	19	.00
	DPR-X	24	.04

Variance within a set of data refers to the average spread of the data set. The assumption of homogeneity of variance is that the spreads of the data for each group are similar or equivalent (Field, 2005; Rovai, Baker, & Ponton, 2013). The Levene's test statistic is used to evaluate the hypothesis that the variance of data between groups is equivalent. Levene's test for homogeneity of variance, $F(1,34) = 6.7$, $p = .01$ indicated that equal variance should not be assumed.

Independent *t* test. An independent samples *t* test was conducted to test the null hypothesis that there is no significant difference in Classroom Behavior subscale scores between parents whose children use paper daily progress reports and parents whose children use electronic daily progress reports. Parents whose children used paper daily progress reports ($M = 4.21$, $SD = 1.44$, $N = 19$) were significantly less likely than parents whose children used electronic daily progress reports ($M = 6.60$; $SD = 3.20$, $N = 24$) to communicate with teachers about their child's classroom behavior, $t(34) = -3.30$, $p = .002$, two-tailed. Using effect size estimates by Cohen (1988), the effect size ($d = .96$) was large. The observed power was .86, indicating that there is an 86% likelihood that the null hypothesis was correctly accepted or rejected. The 95% confidence interval for the mean difference between the two groups was -3.84 to -.90. The researcher rejected the null hypothesis.

Hypothesis Four: PASS - Media Preference

Null hypothesis four states that there is no significant difference in PASS-Media preference between parents whose children use paper daily progress reports and parents whose children use electronic daily progress reports. A Pearson's chi-square test was used to test this hypothesis.

H₀4 assumptions. The following assumptions were reviewed prior to conducting the chi-square test. According to Field (2005), when conducting a chi-square test, a) categorical variables should be used with raw frequency counts; b) the expected frequencies should be greater than 5 for each cell; and C) the overall frequency counts ($N > 30$) should be large (Field, 2005; Rovai, Baker, & Ponton, 2013). In this data set, the preferred mode, text messages, did not satisfy these assumptions (see Figure 8) and was therefore not included in the chi-square contingency table (see Table 12).

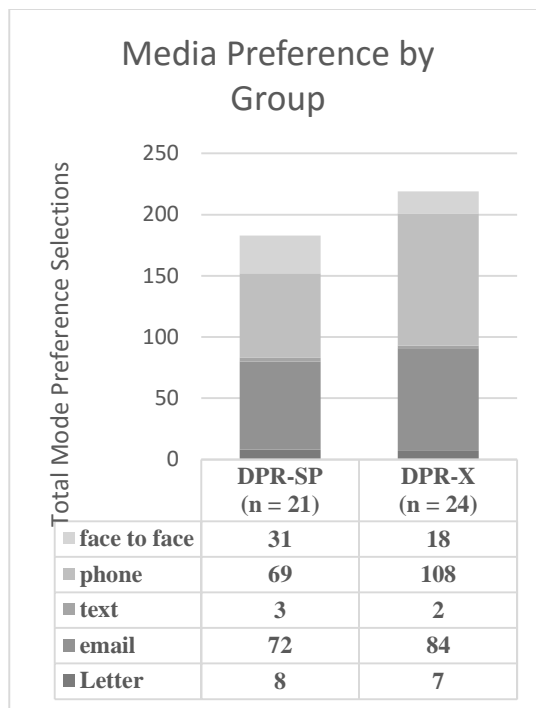


Figure 8. Media preference selections by group

Chi-Square. A chi-square test was performed using a 2 x 4 contingency table to examine the relationship between daily progress report type and parent- preferred mode of communication with teachers (see Table 11). The relationship between these variables was significant, $\chi^2 (3, N = 397) = 9.70, p = .02$. as were the results of the chi-square test: Both groups of parents were most likely to select email and phone as their preferred mode of communication, but parents of those using the paper-based DPRs were more likely to choose face-to-face communication than parents of those using the electronic DPRs. The researcher rejected the null hypothesis.

Table 12

PASS - Media Preference Selections by Group

Group	Preferred Mode			
	letter	email	phone	face to face
DPR-SP	8	72	69	31
Expected count	6.8	70.7	80.3	22.2
% of Group	4.4	40	38.3	17.2
DPR-X	7	84	108	18
Expected count	8.2	85.3	96.7	26.8
% of Group	3.2	38.7	49.8	8.3
Total	15	156	177	49
% of Total	3.8	39.3	44.6	12.3

Chapter Summary

In this chapter, the purpose of the study was reviewed, followed by a restatement of the research question and resulting null hypotheses. Then followed a presentation and discussion of the descriptive statistics of the PASS - Communication scales and the PASS - Media preference scores. The results of each hypothesis were then analyzed, followed by a discussion of the assumptions tests and whether or not they were found to be tenable. Tables and charts were used to accompany each hypothesis description. Finally, the results of each hypothesis test were discussed, and the conclusion-- whether the null hypothesis was retained or rejected-- was restated.

The results of the independent t tests indicated a significant difference in PASS - Communication scale scores and Classroom Behavior subscale scores between groups. No significant difference was identified for the Academic Performance subscale. The results of the

chi-square analysis of PASS - Media preference by group indicated a significant difference in media preference between groups. These findings have potential implications for this particular school and for educational research in general. These findings and their possible implications will be discussed in Chapter Five.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of Chapter Five is to review the results of this study as they relate to previous research. Chapter Five is made up of the following four sections: (a) discussion, (b) conclusions, (c) implications, (d) limitations, and (e) recommendations for future research. A discussion of the findings as they relate to other studies will be followed by conclusions drawn by the researcher, along with a discussion of the practical and theoretical implications. Finally, the limitations of this study are discussed, and recommendations for future research are proposed.

Discussion

In the 21st century, the No Child Left Behind Act has shaped education policy in many ways. One way is by setting new standards for decision- making that involves the use of data collection and evaluation, coupled with research- based practices (LeBel, Chafouleas, Britner, & Simonsen, 2013; Messina, Kolbert, Hyatt-Burkhart, & Crothers, 2015). This guidance has led to the development of MTSS frameworks, such as SWPBIS and RTI, to help ensure that every child is given the support needed to be successful both academically and behaviorally (U.S. Department of Education, 2016; Messina, Kolbert, Hyatt-Burkhart, & Crothers, 2015; Eagle, Dowd-Eagle, Snyder, & Holtzman, 2015). Another way is by encouraging the increased involvement of parents and families in the educational process (National Center for Education Statistics, 2015; Epstein J. L., 2015; Epstein, et al., 2009). Useful data is essential to those MTSS teams working hard to ensure that every child is receiving the tools he needs to be successful. Educators and researchers understand that accurate data collection and dissemination is a crucial part of successful MTSS teams, whose decision- making is used to benefit students. Myers, Briere III, and Simonsen (2015) recommend data collection systems that provide timely

and accurate data. One problem Lebel et al. (2012) notes is that, within Tier 2 systems, paper daily progress reports get lost and are unaccounted for. Parents, as well, are beginning to understand the importance of having access to student data that can help them to help their children (Guidera, 2015; National School Public Relations Association, 2011).

The problem identified in Chapter One is that there is a lack of research on data collection and dissemination methods that make use of electronic means of communication. The purpose of this quasi-experimental posttest- only control group design study was to compare parental involvement, as determined by frequency of home-school communication, between parents whose children use paper daily progress reports and parents whose children use electronic daily progress reports. Parents of both groups of students were surveyed using the PASS survey. These communication scores were evaluated in Chapter Four.

The following research question framed this study: Is parental involvement effected differently for parents whose children use paper-based daily progress reports compared to parents whose children use electronic daily progress reports as measured by the PASS survey? Parents were surveyed and the results were collected and analyzed using SPSS to evaluate each hypothesis.

Hypothesis One: PASS - Frequency

Null hypothesis one states that there is no significant difference in PASS - Communication scores between parents whose children use paper daily progress reports (DPR-SP) and parents whose children use electronic daily progress reports (DPR-X). An independent samples *t* test was conducted to evaluate this null hypothesis. Parents of students using electronic daily progress reports indicated more frequent ($M = 29.08$; $SD = 11.80$) communication, overall,

than parents of children using paper daily progress reports ($M = 25.29$; $SD = 13.29$). The result of the independent t test was significant and the null hypothesis was rejected.

This finding is consistent with what may be expected based on Media Richness Theory as defined by Daft and Lengel (1986) and findings by Thompson, Mazer, and Grady (2015). According to MRT, leaner media, such as letters, are asynchronous, with much time elapsing between transmission and receipt of messages. Also, the sender need not rely on the immediate presence of the intended recipient in order to use “lean” media. The richer media, like face to face communication, are more synchronous by nature and require that another individual be present in order to (a) clarify communication, (b) allow for tonal and body language cues, and (c) decrease ambiguity. The use of the DPR-X website offers parents a means (which is neither “lean” nor “rich,” according to MRT) of communicating with parents. The DPR-X preserves the primary benefit of being asynchronous—namely, convenience—with the primary benefit of being synchronous—accessibility. The DPR-X data are instantly accessible throughout the day; issues still needing clarification could be resolved by phone or email.

The convenience of accessing them electronically increases the likelihood that parents will view DPRs via the DPR-X website, thereby facilitating immediate responses, via e-mail or phone, to teacher feedback throughout the school day. Communications not accessed instantly are still likely to be viewed at the parents’ convenience, via computer, smartphone, tablet or any other internet-enabled device. (Thompson, Mazer, & Grady, 2015). The traditional paper-based form, being by nature a less rich, more asynchronous medium, is more likely to be stuffed in a homework binder or lost in the bottom of a book bag (LeBel, Chafouleas, Britner, & Simonsen, 2013) than is the DPR-X.

Schneider Dissertation Conceptual Framework

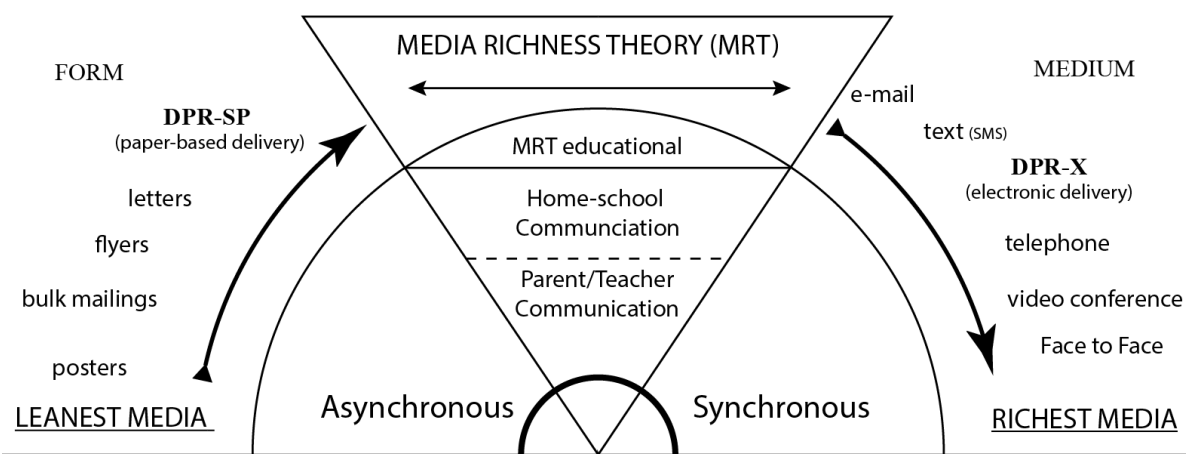


Figure 9. Leanest media to richest media based on Media Richness Theory (Daft & Lengel, 1986; Thompson, Mazer, & Grady, 2015).

Hypothesis Two: Academic Performance Subscale

Hypothesis two was based on the first subscale of the PASS - Communication scale, Academic Performance. The Academic Performance subscale scores were compared using an independent t test. Parents whose children used paper daily progress reports ($M = 11.10$, $SD = 3.90$, $n = 20$) were just as likely to communicate with teachers about their child's academic performance as parents whose children used electronic daily progress reports ($M = 11.95$; $SD = 2.70$, $n = 20$). The results of the t test were not significant, and the null hypothesis was retained. While this finding shows no significant difference between groups, it also confirms the results of much research finding that, overall, parents are consistently interested in the academic success of their children (Guidera, 2015; National School Public Relations Association, 2011).

Table 13

Top Five PASS Items Ranked by Importance and Frequency

Thomson & Mazer (2012) (N = 175)			Thompson et al. (2015) (N = 1,349)			Schneider DPR-X * (N = 24)			Schneider DPR-SP (N = 21)		
Item	M	SD	Item	M	SD	Item	M	SD	Item	M	SD
Q1	2.68	0.58	Q1	2.56	0.63	Q8	2.33	1.09	Q1	2.05	1.07
Q3	2.66	0.59	Q3	2.54	0.63	Q3	2.29	1.12	Q6	2	1.48
Q5	2.63	0.67	Q9	2.53	0.77	Q1	2.25	0.94	Q8	1.81	1.2
Q8	2.56	0.77	Q14	2.53	0.75	Q4	2.21	1.02	Q3	1.81	0.93
Q9	2.53	0.79	Q8	2.52	0.72	Q10	2.13	1.12	Q10	1.8	1.22

The findings of this study likewise confirms findings by Thompson and Mazer (2012) as well as Thompson, Mazer, and Grady (2015) that show communication scores within the Academic Performance and Classroom Behavior subscales are consistently among the highest mean scores indicated by parents. The top five mean scores (see Table 13) show consistently that parents' highest communication scores were within the Academic Performance subscale, (items Q1 through Q7), or within the Classroom Behavior subscale, (items Q8 through Q10). These results also are consistent with findings by the Data Quality Campaign (2015), Guidera (2015), and the NSPRA (2011) survey that indicate parents want secure access to electronically-delivered data that they can use to help their child academically and behaviorally (National School Public Relations Association, 2011).

Hypothesis Three: Classroom Behavior Subscale

Hypothesis three was based on the Classroom Behavior subscale of the PASS - Communication scale. The Classroom Behavior subscale scores were compared using an independent *t* test. Parents whose children used electronic daily progress reports ($M = 6.60$; $SD = 3.20$, $n = 24$) were significantly more likely to communicate with teachers about their child's classroom behavior than parents whose children used paper daily progress reports ($M = 4.21$, $SD =$

= 1.44, $n = 19$). The result of the independent t test was significant and the null hypothesis was rejected.

According to the National School Public Relations Association (2011), parents want information about their child's performance in the classroom. Parents desire information on how well their children are doing, and how to help their children be successful. If their child is not doing well, they want to know immediately, not when it is too late to change the situation (Guidera, 2015). Parents want behavioral data, as well as feedback regarding social skills and expectations for academic content, delivered to them. Ron Koehler, President of the NSPRA confirmed this, encouraging schools to engage parents with "open, honest, and transparent communication" (National School Public Relations Association, 2011, p. 2).

The very intention of the DPR is behavioral progress monitoring. This behavioral data collection is helpful to all stakeholders. It helps the student and the parent understand the perceptions of the teacher. It can help the teachers and administrators identify patterns of behavior which can in turn be used to make decisions that will help the child be more successful. The convenient access provided to all stakeholders by the DPR-X may have led to the significant difference in communication scores.

There are two considerations that help explain the high rank of the Classroom Behavior subscale in this particular study. First, it is natural for parents of middle school students to be concerned with how their children are conducting themselves at school. Parents know intuitively that there is a direct relationship between their child's behavior and his child's academic success. Second, the sample for this study was made up of parents of students in an MTSS upper tier who were using a DPR as a progress monitoring tool to specifically examine their behavior in each class. A student in this study is, typically, a student who needs more behavioral support than a

typical Tier 1 student would. These two considerations help explain the importance of item eight, especially to parents participating in this study.

The results of the NSPRA (2011) survey results, the Thompson and Mazer (2012) study, the Thompson et al. (2015) study, and this particular study, are remarkably consistent. Parents want their children succeed academically. They know that behavior and academic success are directly related. Therefore, parents want and need access to behavioral and academic content that can help them to help their children. The DPR-X is a tool that may be used to deliver the content parents need daily in order to help their children to behave well and to excel academically.

Hypothesis Four: PASS - Media Preference

Hypothesis four was based on the PASS - Media preferences selected by parents. Since the occurrence of text messages was fewer than five in both groups, text messages were not included in the analysis. A chi-square test was performed using a 2 x 4 contingency table to examine the relationship between daily progress report type and parent- preferred mode of communication with teachers. The results of the chi-square test were significant, $\chi^2 (3, N = 397) = 9.70, p = .03$, and the null hypothesis was rejected. Parents whose children use electronic daily progress reports were more likely to select e-mail and phone as their preferred mode of communication; parents whose children use paper daily progress reports were most likely to assert a preference for face-to-face meetings more frequently than other modes of communication.

This study confirms findings that parents' preference for e-mail is high. This finding confirms the finding of Thompson, Mazer, and Grady (2015) who had determined that the widespread use of smartphones and wireless access substantially correlated with increased preference

for e-mail communication with teachers (Thompson B., 2008; Thompson & Mazer, 2012). The findings of hypothesis four (see Figure 8) demonstrated that parents whose children used the electronic daily progress report were more likely to prefer e-mail and phone communication to other forms of communication. Thompson et al. (2015) suggest that e-mail is often the most convenient form of communication for parents, especially considering the availability of smartphones and other devices. As smartphones and other wireless devices increase convenience of access to DPR data, more parents will be likely to view it at a time that is convenient. Parents, who utilize the electronic DPR on a smartphone during the school day at a time convenient to them, may be inclined to use the smartphone to communicate with teachers using e-mail or phone.

Conclusions

With regard to the research question, “Is parental involvement effected differently for parents whose children use paper-based daily progress reports compared to parents whose children use electronic daily progress reports as measured by the PASS survey?” the answer determined by this particular study is affirmative. In Chapter One, the problem with current modes of DPR data collection and dissemination was outlined. This problem drove the purpose of this study, which was expressed in research question one and the accompanying null hypotheses. A thorough literature review in Chapter Two outlined the context for this study and situated it within the current educational context. The positive correlation between parental involvement and student achievement was shown to have been substantiated by many studies. An essential aspect of parent involvement involved home-school communication. The theoretical framework, Media Richness Theory by Daft and Lengel (1989) was explained in light of the work by Thompson and Mazer (2012) on educational communication. Thompson and Mazer

(2012) recently developed the PASS in an effort to better understand parent-teacher communication practices. These practices, involving the regularity of communication and parental media preference, were measured by the parental academic support scale survey.

Chapter Three outlined the methods used to create the groups of participants, using intact groups to avoid the dual threats to internal validity known as the Hawthorne effect and the John Henry effect. It also outlined the instrumentation and the procedures to be used in order to replicate the study. The data analysis was described, as well as the various assumptions that needed to be tested prior to conducting independent t tests to determine whether a significant difference exists between groups of parents on communication scores. The assumptions and a description of the chi-square test used to evaluate differences in media preference between groups were reviewed.

Chapter Four presented the findings of this study along with the descriptive statistics for PASS - Communication scores and PASS - Media preference scores. Each hypothesis was restated, accompanied by a description of the assumptions and whether or not they were found to be tenable. The results of each independent t test were clearly stated along with the effect size and observed power. Chapter Five has been used to draw connections, where possible, to previous findings of the research as outlined in the review of literature. Each hypothesis was discussed in the light of these findings; contradictions and confirmations were highlighted.

Implications

Theoretical Implications

The most important implication of this study can be summarized and illustrated the following reciprocal relationship. The more schools provide parents with the content they need to help their children, delivered in the most convenient medium which they prefer, the more

parental involvement will increase. As parental involvement increases, positive academic and behavioral outcomes increase, with the end result being more successful students and more successful schools. The research is compelling. When schools engage parents in the educational process, students realize higher levels of student achievement than when parents are not involved. Furthermore, this study confirms that when parents are delivered the DPR data that will help them to reinforce their children's education from home, using a medium that is asynchronous and accessible, the level of parental involvement increases.

Practical Implications

Prior to the completion of this study there were several practical problems expressed by the administration and teaching staff at this particular research location. The large suburban middle school with nearly 700 students cited several concerns that were the impetus for development of the DPR-X. Among the practical problems that accompanied paper-based daily progress reports were the following, (a) students' feeling self-conscious (b) teachers' being confronted, and (c) gaps in the data.

Similarly to the findings of Hawken, Bundock, Kladis, O'Keeffe, and Barrett (2014), this study found that students in this particular research setting had expressed feelings of self-consciousness when asked to carry a "point sheet" (DPR-SP)(to use the vernacular). Students, particularly adolescents, are particularly averse to standing out in any way. Hawken et al. (2014) likewise mention solutions, such as carrying wallet- sized DPRs or using Google docs, to fill out the point sheet. The DPR-X provides an alternative for students who are self-conscious or unwilling to carry a paper DPR for any number of reasons.

A second practical problem, not mentioned in the literature, but based on anecdotes from school administrators and case managers, is the confrontation of teachers by students. Students

carrying paper daily progress reports are well-aware they are being watched, and that their behavior is being scrutinized. For some students, this is not a particularly helpful solution for problem behavior. In fact, at times the DPR became the impetus for problem behavior. Teachers providing critical feedback would be confronted by the student and the result would be conflict. At times, students were known to tear up the point sheet in the presence of a teacher who had given critical feedback. Other students would express their contempt for the feedback by simply giving up: crumpling the DPR into a ball and throwing it away. Still other times, students would be found forging or manipulating their scores on the paper DPR.

The main concern is data collection. Consistent with the findings of LeBel et al. (2013), as well as Simonsen, Myers, and Briere III, (2010), missing data increases the likelihood of making poor decisions. If the data is missing or otherwise compromised, the decisions based on that data will likewise be compromised. For these and other problems the DPR-X provides a convenient solution. The DPR-X removes the student from the data collection process, while including the student in the feedback. Used appropriately, the DPR-X can provide all the benefits of accurate data collection and feedback, in essence, leveling the playing field so that all stakeholders are viewing the most accurate and relevant data. All stakeholders with secure access and viewing privileges may see the DPR and the feedback, yet, only the teacher is allowed to enter or manipulate the data.

Limitations

One of the limitations of this study was the small sample size ($N = 45$). The small sample size warrants further investigation: accordingly, this study should be repeated with a larger sample size. Another limitation to this study is the quasi-experimental design compromising causal inference to other populations outside of this one. Results of this study cannot be

generalized beyond the limits of this particular population. Further studies should be completed in other geographic locations and with other populations in order to confirm or contradict the findings of this study.

According to Rovai, et al. (2013) a major challenge in social science research is to balance internal and external forces in order to create a valid study. In this study, a potential threat to internal validity that was controlled for was the experimental treatment diffusion threat. The threat results when participants become aware that they are part of either the control or treatment group. This threat was controlled for by ensuring that groups of students working together were using the same DPR type so that interactions between individuals in the treatment and control groups would be minimized. Using these groups did not allow for random selection of each individual to treatment and control group, which would have enhanced the external validity of the study. According to Gall, et al. (2007) educational researchers at times must use intact groups of students which is an obstacle to random assignment. In this case, small, intact groups of students were randomly assigned to treatment and control groups.

The pretest was eliminated in this research design in order to avoid the internal threat to validity known as the testing threat, as well as the external threat to validity known as the Hawthorne effect. According to Rovai, et al. (2013) the tendency of some people to work harder to perform better when they know they are being observed is known as the Hawthorne effect. The testing threat to internal validity occurs when the pretest impacts the behavior of those being observed. In this case, parent participants in a pretest survey, reading the PASS -communication indicators, would be likely to work harder to meet or surpass the implied expectations. Likewise, parent participation on the PASS as a pretest would sensitize parents to the various communication items being measured and likely influence their practices and responses to the

posttest. Both threats were recognized as potential problems and controlled for by using a quasi-experimental posttest-only design. According to Rovai, et al. (2013) quasi-experiments lack random assignment and are used to approximate the conditions of the true experiment. Since the researcher lacked the ability to randomly assign each individual to a group, this study would be considered a quasi-experimental design; therefore, the ability to infer outcomes for the general population is affected.

Another limitation is imposed by the use of the PASS survey. The PASS is used to determine parent communication practices. This perspective is greatly needed; however, teacher perceptions of parent involvement as well as student perceptions might also need to be studied to gain a more informed view of parent communication practices. Students and teachers could provide much needed information to develop the connections between parental involvement and student achievement.

Recommendations for Future Research

As the perpetual nature of educational research dictates, new findings become the impetus for new questions. This study is no different. It has led this researcher to many new findings, and these new findings have led to new questions that may be good starting points for further research. This study should be repeated in other geographic locations, with larger samples sizes, and with students and parents of varying demographics.

The finding that parent-teacher communication about classroom behavior was higher for parents whose children used electronic DPRs does not necessarily mean that increased accessibility equals increased access of the data. Providing parents with more convenient, asynchronous access does not necessarily make the DPR data more convenient to access for

someone without wireless capabilities. Nor does it mean that giving parents that have the wireless capabilities, more convenient access to DPR data, that they will necessarily view it. Although the majority of parents surveyed in the 2015 NSCC survey indicated that they have internet access at home, there was no requirement for participation in this study. Future research may be needed to examine the actual frequency with which parents access the DPR data. Likewise, the fact that the DPR-SP was sent home does not mean the parents actually reviewed it with their child. Further studies might examine the frequency of parental access using a tracking code placed on the DPR-X websites to draw correlations between the number of times the website is accessed by the parent and any increase or decrease in observed behaviors. This data could also be used to examine the correlation between parents' use of the DPR-X website and reduced problem behaviors or increased communication with teachers. Further, collecting data on parent supports, such as their use of reinforcements at home, might be used to improve parental academic support.

REFERENCES

- Armstrong, R. A. (2014). When to use the Bonferroni correction. *Ophthalmic & Physiological Optics, 34*, 502-508. doi:10.1111/opo.12131
- Arthur, C. (2014). *Digital wars: Apple, Google, Microsoft and the battle for the internet*. Philadelphia, PA: Kogan Page .
- Badger, J. M., Kaminsky, S. E., & Behrend, T. S. (2014). Media richness and information acquisition in internet recruitment. *Journal of Managerial Psychology, 29*(7), 866-883. doi:10.1108/JMP-05-2012-0155
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 1175-1184*.
- Benner, G. J., Kutash, K., Nelson, R. J., & Fisher, M. B. (2013). Closing the achievement gap of youth with emotional and behavioral disorders through multi-tiered systems of support. *Education and Treatment of Children, 36*(3), 15-29. doi:10.1353/etc.2013.0018
- Benner, G. J., Nelson, J. R., Ralston, N. C., & Mooney, P. (2010). A meta-analysis of the effects of reading instruction on the reading skill of students with or at risk of behavioral disorders. *Behavioral Disorders, 35*(2), 86-102. Retrieved from <http://www.jstor.org/stable/43153810>
- Benner, G. J., Nelson, J. R., Stage, S. A., & Ralston, N. C. (2011). The influence of fidelity of implementation on the reading outcomes of middle school students experiencing reading difficulties. *Remedial and Special Education, 32*(1), 79-88. doi:10.1177/0741932510361265
- Benner, G. J., Sanders, E. A., Nelson, J. R., & Ralston, N. C. (2013). How individual and school aggregate baseline behavior levels moderate response to a primary level behavior

- intervention. *Behavioral Disorders*, 38(2), 73-87. Retrieved from <http://search.proquest.com/docview/1367706715?accountid=12085>
- Bower, H. A., & Griffin, D. (2011). Can the Epstein model of parental involvement work in a high minority, high poverty elementary school? A case study. *American School Counselor*, 15(2), 77-87. doi:10.5330/psc.n.2011-15.77
- Burke, M. D., & Vannest, K. J. (2008, Spring). Behavioral-progress monitoring using the electronic daily behavioral report card (e-DBRC) system. *Preventing school failure*, 52(3), 51-59. doi:10.3200/psfl.52.3.51-60
- Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Boston: Houghton Mifflin Company.
- Carnine, D. (1995). The professional context for collaboration and collaborative research. *Remedial & Special Education*, 16(6), 368.
- Carnine, D. (1997, June). Bridging the research to practice gap. *Exceptional Children*, 63(4), 513-521. doi:doi: 10.1177/001440299706300406
- Chafouleas, S. M., Jaffery, R., Riley-Tillman, T. C., Christ, T. J., & Sen, R. (2013). The impact of target, wording, and duration on rating accuracy for direct behavior rating. *Assessment for Effective Intervention*, 39(1), 39-53. doi:10.1177/1534508413489335
- Chafouleas, S. M., Kilgus, S. P., & Maggin, D. M. (2012). Evaluating sensitivity to behavioral change using direct behavior rating single item scales. *Exceptional Children*, 78(4), 491-505. Retrieved from <http://search.proquest.com/docview/1022655100?accountid=12085>
- Christ, T. J., Riley-Tillman, T. C., Chafouleas, S., & Jaffery, R. (2011). Direct behavior rating: An evaluation of alternate definitions to assess classroom behaviors. *School Psychology Review*, 40(2), 181-199. Retrieved from

http://go.galegroup.com.ezproxy.liberty.edu:2048/ps/i.do?id=GALE%7CA262495761&v=2.1&u=vic_liberty&it=r&p=AONE&sw=w&asid=cda232ce5253908070179531ed159d

11

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, 38(5), 300-314.

Connecticut Economic Resource Center. (2015, July 19).

<https://www.cerc.com/TownProfiles/Custom-Images/windsor.pdf>. Retrieved from
www.cerc.com: <https://www.cerc.com/TownProfiles/Custom-Images/windsor.pdf>

Connecticut State Department of Education. (2015, January 1). *2012-13 SPMS Strategic School Profile*. Retrieved January 1, 2015, from State Department of Education CEDaR:

<http://sdeportal.ct.gov/Cedar/WEB/ResearchandReports/SSPReports.aspx>

Connecticut State Department of Education Bureau of Special Education. (2014). *Development of a multi-tiered statewide system of behavioral interventions and supports*. Hartford: Connecticut State Department of Education. Retrieved from

http://www.sde.ct.gov/sde/lib/sde/pdf/rfp/ct_sctg_federal_proposal.pdf

Cook, C. R., Lyon, A. R., Kubergovic, D., Wright, D. B., & Zhang, Y. (2015). A supportive beliefs intervention to facilitate the implementation of evidence based practices within a multi-tiered system of supports. *School Mental Health*, 7, 49-60. doi:10.1007/s12310-014-9139-3

Crone, D. A., Hawken, L. S., & Horner, R. H. (2010). *Responding to problem behavior in schools: The behavior education program*. New York: The Guilford Press.

- Cutrona, C. E. (1989). Ratings of social support by adolescents and adult informants: Degree of correspondence and prediction of depressive symptoms. *Journal of Personality and Social Psychology*, 57(4), 723-730.
- Daft, R. L., & Lengel, R. H. (1986, May). Organizational information requirements, media richness and structural design. *Management Science*, 32(5), 554-571.
- Daft, R. L., Lengel, R. H., & Trevino, L. K. (1987). Message equivocality, media selection, and manager performance: Implications for information systems. *MIS Quarterly*, 355-366.
- Data Quality Campaign. (2015, April 14). *Who We Are*. Retrieved from <http://dataqualitycampaign.org/>: <http://dataqualitycampaign.org/who-we-are>
- Dennis, A. R., & Valacich, J. S. (1999). Rethinking media richness: Towards a theory of media synchronicity. *Proceedings of the 32nd Hawaii International Conference on System Sciences*, 1-10. doi:10.1109/hicss.1999.772701
- Dulaney, S. K., Hallam, P. R., & Wall, G. (2013). Superintendent perceptions of multi-tiered systems of support (MTSS): Obstacles and opportunities for school system reform. *AASA Journal of Scholarship and Practice*, 30-45.
- Eagle, J. W., Dowd-Eagle, S. E., Snyder, A., & Holtzman, E. G. (2015). Implementing a multi-tiered system of support (MTSS): Collaboration between school psychologists and administrators to promote systems-level change. *Journal of Educational and Psychological Consultation*, 25, 160-177. doi:10.1080/10474412.2014.929960
- Epstein, J. L. (1995). School/family/community partnerships. *Phi Delta Kappan*, 701-713.
- Epstein, J. L. (2007). Connections count: Improving family and community involvement in secondary schools. *Principal Leadership*, 8(2), 16-22. Retrieved from <http://search.proquest.com/docview/234991120?accountid=12085>

- Epstein, J. L. (2015, April 28). *National Network of Partnership Schools at Johns Hopkins University*. Retrieved from National Network of Partnership Schools:
<http://www.csos.jhu.edu/p2000/>
- Epstein, J. L., Sanders, M. G., Simon, B. S., Salinas, K. C., Jansorn, N. R., & Van Voorhis, F. L. (2009). *School, family, and community partnerships: Your handbook for action*. Thousand Oaks, CA: Corwin Press.
- Fabiano, G. A., Vujnovic, R. K., Pelham, W. E., Waschbusch, D. A., Massetti, G. M., Pariseau, M. E., . . . Volker, M. (2010). Enhancing the effectiveness of special education programming for children with attention deficit hyperactivity disorder using a daily report card. *School Psychology Review, 39*(2), 219-239. Retrieved from
<http://search.proquest.com/docview/608758743?accountid=12085>
- Field, A. (2005). *Discovering statistics using SPSS*. Thousand Oaks: Sage Publications.
- Filter, K. J., McKenna, M. K., Benedict, E. A., Horner, R. H., Todd, A. W., & Watson, J. (2007). Check in/ Check out: A post-hoc evaluation of an efficient, secondary level targeted intervention for reducing problem behaviors in schools. *Education and Treatment of Children, 69*-84.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: an introduction*. Boston: Pearson Inc.
- Gartner, Inc. (2015, May 21). *Gartner says worldwide Chromebook sales will reach 7.3 million units in 2015*. Retrieved April 9, 2016, from www.gartner.com:
<http://www.gartner.com/newsroom/id/3058517>
- Google. (2015, July 16). *Google for Education*. Retrieved from Google for Education:
<https://www.google.com/edu/case-studies/fountainhead-global-school/>

- Google. (2015, July 29). *Privacy-Google for work help*. Retrieved from <https://support.google.com/work/answer/6056650>
- Google Inc. (2015, April 29). *Google for Education: Save time and stay connected*. Retrieved from Google for Education: <https://www.google.com/edu/products/productivity-tools/>
- Green, S. B., & Salkind, N. J. (2011). *Using SPSS for Windows and Macintosh: Analyzing and understanding data custom edition for Liberty University*. Upper Saddle River: Prentice Hall.
- Guidera, A. R. (2015, February). Parents need access to education data and need to know it's secure. *Kappan*, 96(5), 8-12. doi:10.1177/0031721715569462
- Hall, C. M., & Bierman, K. L. (2015). Technology-assisted interventions for parents of young children: Emerging practices, current research, and future directions. *Early Childhood Research Quarterly*, 33, 21-32. doi:10.1016/j.ecresq.2015.05.003
- Harlacher, J. E., Sakellaris, T. L., & Kattelman, N. M. (2014). *Practitioner's guide to curriculum-based evaluation in reading*. New York: Springer Science and Business Media.
- Hawken, L. S., Bundock, K., Kladis, K., O'Keeffe, B., & Barrett, C. A. (2014). Systematic review of the check-in, check-out intervention for students at risk for emotional and behavioral disorders. *Education and Treatment of Children*, 37(4), 635-658.
- Hayes, L., & Lillenstein, J. (2015). *A framework for coherence: College and career readiness standards, multi-tiered systems of support and educator effectiveness*. Washington D.C.: American Institutes for Research. Retrieved from http://www.gtlcenter.org/sites/default/files/Multi-Tiered_Systems_of_Support.pdf
- Heath, D., Maghrabi, R., & Carr, N. (2015). Implications of information and communication technologies for school-home communication. *Journal of Information Technology*

Education: Research, 14, 363-396. Retrieved from

<http://www.jite.org/documents/Vol14/JITEv14ResearchP363-395Heath1876.pdf>

Ho, L., Hung, C., & Chen, H. (2013). Using theoretical models to examine the acceptance behavior of mobile phone messaging to enhance parent-teacher interactions. *Computers & Education*, 61, 105-114. doi:10.1016/j.compedu.2012.09.009

Hoover-Dempsey, K. V., & Sandler, H. M. (1995). Parental involvement in childrens education: Why does it make a difference? *Teachers College Record*, 97, 311-331.

Hoover-Dempsey, K. V., & Sandler, H. M. (1997). Why do parents become involved in their children's education? *Review of Educational Research*, 67(1), 3-42. Retrieved from <http://www.jstor.org/stable/1170618>

Hoover-Dempsey, K. V., & Sandler, H. M. (1997). Why do parents become involved in their children's education? *Review of Educational Research*, 67(1), 3-42.

Hornby, G., & Lafaele, R. (2011, February). Barriers to parental involvement in education: an explanatory model. *Educational Review*, 63(1), 37-52.

Ingram, M., Wolfe, R. B., & Lieberman, J. M. (2007). The role of parents in high-achieving schools serving low-income, at-risk populations. *Education and Urban Society*, 479-497. doi:10.1177/0013124507302120

Kong, S. C., Chan, T., Griffin, P., Hoppe, U., Huang, R., Looi, C. K., . . . Yu, S. (2014, January 1). E-learning in school education in the coming 10 years for developing 21st century skills: Critical research issues and policy implications. *Educational Technology & Society*, 17(1), 70-78. Retrieved from <http://web.b.ebscohost.com.ezproxy.liberty.edu:2048/ehost/pdfviewer/pdfviewer?sid=120ecc48-3138-496b-9de8-2f7303942ae1%40sessionmgr198&vid=1&hid=102>

- Kosaretskii, S. G., & Chernyshova, D. V. (2013). Electronic communication between the school and the home. *Russian Education and Society*, 81-89. doi:10.2753/RES1060-9393551006
- Lane, K. L., Oakes, W. P., & Menzies, H. M. (2014). Comprehensive, integrated, three-tiered models of prevention: Why does my school and district need an integrated approach to meet students academic, behavioral, and social needs? *Preventing School Failure: Alternative Education for Children and Youth*, 58(3), 121-128.
doi:10.1080/1045988X.2014.893977
- LeBel, T. J., Chafouleas, S. M., Britner, P. A., & Simonsen, B. (2013). Use of a daily report card in an intervention package involving home-school communication to reduce disruptive behavior in preschoolers. *Journal of Positive Behavior Interventions*, 15(2), 103-112.
doi:10.1177/1098300712440451
- Lengel, R. H., & Daft, R. L. (1989, Aug.). The selection of communication media as an executive skill. *The Academy of Management Executive*, 2(3), 225-232.
doi:10.5465/ame.1988.4277259
- Lenhart, A., Duggan, M., Perrin, A., Stepler, R., Rainie, L., & Parker, K. (2015, July 27). *Teens, social media, and technology overview 2015* | Pew Research Center. Retrieved from Pewresearch.org: <http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015/>
- LifeLock. (2015, August 17). *Children/Family/Home LifeLock*. Retrieved from LifeLock: <https://www.lifelock.com/education/children-family-home/children-id-theft-protection/>
- Lopez, C. O., & Donovan, L. (2009). Involving Latino parents with mathematics through family math nights: A review of the literature. *Journal of Latinos and Education*, 219-230.
doi:10.1080/15348430902888666

- Mazer, J. P., & Graham, E. E. (2015). Measurement in instructional communication research: A decade in review. *Communication Education, 64*(2), 208-240.
doi:10.1080/03634523.2014.1002509
- Mazer, J. P., & Thompson, B. (2016). Parental academic support: A validity report. *Communication Education, 65*(2), 213-221. doi:10.1080/03634523.2015.1081957
- McDaniel, S. C., Houchins, D. E., & Robinson, C. (2016). The effects of check, connect, and expect on behavioral and academic growth. *Journal of Emotional and Behavioral Disorders, 24*(1), 42-53. doi:10.1177/1063426615573262
- Messina, K. C., Kolbert, J. B., Hyatt-Burkhart, D., & Crothers, L. M. (2015). The role of mental health counselors in promoting school-family collaboration within the tiered school wide positive behavioral intervention and support model. *The Family Journal: Counseling and Therapy for Couples and Families, 23*(3), 277-285. doi:10.1177/1066480715574471
- National Center for Education Statistics. (2015). *Parent and family involvement in education, from the national household education surveys program of 2012*. Washington, D.C.: U.S. Department of Education. Retrieved from <http://nces.ed.gov/pubs2013/2013028rev.pdf>
- National School Climate Center. (2015). *The comprehensive school climate inventory: Measuring the climate for learning*. New York: National School Climate Center. Retrieved from <http://www.schoolclimate.org/>
- National School Public Relations Association. (2011). *National survey pinpoints communication preferences in school communication*. Rockville, MD: NSPRA. Retrieved from <https://www.nspr.org/files/docs/Release%20on%20CAP%20Survey.pdf>

- Pledge to Parents & Students Leading School Service Providers Pledge to Advance Student Data Protections for Student Personal Information.* (2015, May 6). Retrieved from Student Privacy Pledge: <http://studentprivacypledge.org/>
- Pool, J. L., Carter, D. R., & Johnson, E. S. (2012). Tier 2 team processes and decision-making in a comprehensive three tiered model. *Intervention in School and Clinic, 232-239.*
doi:10.1177/1053451212463961
- Positive Behavioral Interventions & Supports. (2016, March 3). *PBIS.org Home Page.* Retrieved from Positive behavioral interventions and supports OSEP technical assistance center: <http://www.pbis.org>
- Purcell, K., Heaps, A., Buchanan, J., & Friedrich, L. (2015, July 27). *How teachers are using technology at home and in their classrooms | Pew Research Center.* Retrieved from Pewresearch.org: <http://www.pewinternet.org/2013/02/28/how-teachers-are-using-technology-at-home-and-in-their-classrooms/>
- Rasch, D., Teuscher, F., & Guiard, V. (2007). How robust are tests for two independent samples? *Science Direct, 137, 2706-2720.* doi:10.1016/j.jspi.2006.04.011
- Rovai, A. P., Baker, J. D., & Ponton, M. K. (2013). *Social science research design and statistics.* Chesapeake, VA.: Watertree Press.
- Saidinejad, M., Teach, S. J., & Chamberlain, J. M. (2012). Internet access and electronic communication among families in an urban pediatric emergency department. *Pediatric Emergency Care, 28(6), 553-557.* doi:10.1097/pec.0b013e318258ad76
- Seitsinger, A. M., Felner, R. D., Brand, S., & Burns, A. (2008). A large-scale examination of the nature and efficacy of teachers' practices to engage parents: Assessment, parental contact,

and student-level impact. *Journal of School Psychology, 46*(4), 477-505.

doi:10.1016/j.jsp.2007.11.001

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Belmont, CA: Wadsworth.

Sheikh, K. A., & Goldberg, K. (2014, June). Schools and digital education technologies. *New Jersey Lawyer, 23-26*. Retrieved from

<http://www.njsba.com/images/content/1/0/1007796.pdf#page=23>

Simonsen, B., Myers, D., & Briere III, D. E. (2010). Comparing a behavioral check in / check out intervention to standard practice in an urban middle school setting using an experimental group design. *Journal of Positive Behavior Interventions, 13*(1), 31-48.

doi:10.1177/1098300709359026

Smith, A., McGeeney, K., Duggan, M., Rainie, L., & Keeter, S. (2015, April 1). *U.S. smartphone use in 2015*. Retrieved from Pewresearch.org:

<http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>

Stormont, M., Reinke, W. M., Herman, K. C., & Lembke, E. S. (2012). *Academic and behavior supports for at-risk students: Tier 2 interventions*. New York: The Guilford Press.

Sugai, G., & Horner, R. R. (2006). A promising approach for expanding and sustaining school-wide positive behavior support. *School Psychology Review, 245-259*.

Sugai, G., & Simonsen, B. (2012). *Positive behavioral interventions and supports: History, defining features, and misconceptions*. Center for PBIS & Center for Positive Behavioral Interventions and Supports. Storrs: University of Connecticut. Retrieved from http://www.challengingbehavior.org/explore/webinars/8.24.2012_tacsei_webinar/PBIS_revisited_June19r_2012.pdf

- Sugai, G., & Simonsen, B. (2013). PBIS in alternative education settings: Positive support for youth with high-risk behavior. *Education and Treatment of Children*, 3-14. Retrieved from http://go.galegroup.com.ezproxy.liberty.edu:2048/ps/i.do?id=GALE|A342771287&v=2.1&u=vic_liberty&it=r&p=AONE&sw=w
- Sugai, G., & Simonsen, B. (2013, 9 20). *pbis revisited*. Retrieved from www.pbis.org: http://pbis.org/school/pbis_revisited.aspx
- Sugai, G., O'Keeffe, B. V., & Fallon, L. M. (2011). A contextual consideration of culture and school-wide positive behavior support. *Journal of Positive Behavior Interventions*, 197-208. doi:10.1177/1098300711426334
- Sugai, G., Sprague, J. R., Horner, R. H., & Walker, H. M. (2000). Preventing school violence: The use of office disciplinary referrals to assess and monitor school-wide discipline interventions. *Journal of Emotional and Behavioral Disorders*, 8(2), 94-101. Retrieved from <http://p2048-www.liberty.edu.ezproxy.liberty.edu:2048/login?url=http://search.proquest.com.ezproxy.liberty.edu:2048/docview/214905113?accountid=12085>
- Sung, Y.-T., Chang, K.-E., & Liu, T.-C. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers & Education*, 94, 252-275. doi:10.1016/j.compedu.2015.11.008
- Swoszowski, N. C. (2014). Adapting a tier 2 behavioral intervention, check-in/check-out, to meet students' needs. *Intervention in School and Clinic*, 49(4), 211-218. doi:10.1177/1053451213509485

- Thompson, B. (2008). Characteristics of parent-teacher e-mail communication. *Communication Education*, 201-223. doi:10.1080/03634520701852050
- Thompson, B. C., Mazer, J. P., & Grady, E. F. (2015). The changing nature of parent-teacher communication: mode selection in the smartphone era. *Communication Education*, 64(2), 187-207. doi:10.1080/03634523.2015.1014382
- Thompson, B., & Mazer, J. P. (2012). Development of the parental academic support scale: Frequency, importance, and modes of communication. *Communication Education*, 61(2), 131-160. doi:10.1080/03634523.2012.657207
- U.S. Department of Education. (2014, July 5). *Transparency Best Practices*. Retrieved June 30, 2015, from Privacy Technical Assistance Center (PTAC) U.S. Department of Education: <http://ptac.ed.gov/sites/default/files/LEA%20Transparency%20Best%20Practices%20final.pdf>
- U.S. Department of Education. (2015, August 5). *No Child Left Behind-Ed.gov*. Retrieved from [www2.ed.gov: http://www2.ed.gov/nclb/landing.jhtml](http://www2.ed.gov/nclb/landing.jhtml)
- U.S. Department of Education. (2015, June 30). *Protecting student privacy while using online educational services model terms service*. Retrieved from Privacy Technical Assistance Center (PTAC) U.S. Department of Education: <http://ptac.ed.gov>
- U.S. Department of Education. (2016, April 4). *The Elementary and Secondary Education Act (The No Child Left Behind Act of 2001)*. Retrieved from [www2.ed.gov: http://www2.ed.gov/policy/elsec/leg/esea02/index.html](http://www2.ed.gov/policy/elsec/leg/esea02/index.html)
- Vannest, K. J., Burke, M. D., Payne, T. E., Davis, C. R., & Soares, D. A. (2011, May/June). Electronic progress monitoring of IEP goals and objectives. *Teaching Exceptional*

Children, 43(5), 40-51. Retrieved from

<http://search.proquest.com/docview/865919410?accountid=12085>

Warner, R. M. (2013). *Applied statistics: From bivariate through multivariate techniques*. Los Angeles: Sage Publications.

Weber, A. S. (2016, January). The big student big data grab. *International Journal of*

Information and Education Technology, 6(1), 65-70. doi:10.7763/IJET.2016.V6.660

Witzel, B., & Clarke, B. (2015). Focus on inclusive education: Benefits of using a multi-tiered system of supports to improve inclusive practices. *Childhood Education*, 91(3), 215-219.

doi:10.1080/00094056.2015.1047315

APPENDICES

Appendix A: Parental Academic Support Scale

Parental Academic Support Scale

Table A1 Parental Academic Support Scale survey (Thompson & Mazer, 2012)

Please check the box below each question indicating your communication frequency.

**This past month I communicated
with my child's teacher about...**

1. my child's grades in the class	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
2. why my child has a missing assignment.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
3. how my child can improve his/her grade.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
4. why my child received the grade he/she did.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
5. why my child was not completing assignments.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
6. learning more about homework assignments.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
7. a question I had about an assignment.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
8. solutions to address my child's behavior in class.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting

9. my child talking back to the teacher.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
10. my child goofing off in class.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
11. my child's ability to make/maintain friendships with peers.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
12. how my child was not bringing materials to class.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
13. my child being picked on by his/her classmates.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
14. a major classroom behavioral incident (fight, etc.).	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
15. a temporary health issue that my child is experiencing.	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting
16. a major physical health issue that my child is experiencing	<input type="checkbox"/> Not at all	<input type="checkbox"/> Once or twice	<input type="checkbox"/> Once a week	<input type="checkbox"/> Several times a week	<input type="checkbox"/> About every day
<i>Please select the mode used most frequently.</i>	<input type="checkbox"/> Personal note/letter	<input type="checkbox"/> e-mail	<input type="checkbox"/> text message	<input type="checkbox"/> telephone	<input type="checkbox"/> face to face meeting

Source: (Thompson & Mazer, Development of the parental academic support scale: Frequency, importance, and modes of communication, 2012, p. 140) Adapted and used with permission.

Appendix B: IRB Approved Consent Form

The Liberty University Institutional
Review Board has approved
this document for use from
11/30/15 to --
Protocol # 2357.113015

CONSENT FORM

Title: *The Effect of Daily Progress Reports on Parental Academic Support: Paper Versus Electronic Communication*

Principal Investigator: *Jonathan Schneider*

Liberty University: *School of Education*

You are invited to be in a research study on communication types. You were selected as a possible participant because you have a middle school child who uses a Daily Progress Report. I ask that you read this form and ask any questions you may have before agreeing to take the survey.

This study is being conducted by Jonathan Schneider, a doctoral candidate at Liberty University in cooperation with Sage Park Middle School.

Background Information:

The purpose of this study is to find whether parent academic support is effected differently based on the mode of communication used to deliver Daily Progress Report data. The study will compare paper-based and electronic communication media.

Procedures:

If you agree to be in this study, I would ask you to read and check off your responses to the following 16 two-part items in the Parental Academic Support Scale survey. The survey typically takes between 2-5 minutes to complete.

Risks and Benefits of being in the Study:

This study has minimal risks, which are no more than the participant would encounter in everyday life.

The possible benefits to participation are applicable to future middle school children.

The results of this study have the potential to:

- Extend the current research base on home-school communication.
- Extend the current research base on parent and family engagement.
- Help schools to improve current educational practices involving home school communication.
- Help schools to improve current educational practices involving parent and family engagement.
- Enhance the progress monitoring of students.
- Increase the level of support provided to students in Multi-tiered delivery systems of support.
- Enhance the data collection and dissemination models currently used for progress monitoring.

Compensation:

There will be no compensation as a result of your participation in this survey.

The Liberty University Institutional
Review Board has approved
this document for use from
11/30/15 to --
Protocol # 2357.113015

Confidentiality:

The survey is completely voluntary and your name will not be attached to your survey; only a code will be used to identify who the survey was taken by. The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely and only the researcher will have access to the records. These surveys are coded with a number that is identifiable only to the Primary Investigator. It is used only to ensure appropriate pairing of subjects. Any paper-based surveys will be stored in a secured office filing cabinet and then shredded once data is transferred to an electronic document. All electronic surveys will be stored in a Google Apps for Education password protected account.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University or Windsor Public Schools. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:



You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

Signature: _____ Date: _____

Signature of Investigator: _____ Date: _____

Appendix C: Liberty IRB Exemption Letter

LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

November 30, 2015

Jonathan D. Schneider
 IRB Exemption 2357.113015: The Effect of Daily Progress Reports on Parental Academic Support:
 Paper Versus Electronic Communication

Dear Jonathan,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(2), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
 (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at [REDACTED]

Sincerely,

[REDACTED]

G. Michele Baker, MA, CIP
 Administrative Chair of Institutional Research
 The Graduate School

LIBERTY
 UNIVERSITY.
 Liberty University | Training Champions for Christ since 1971

Appendix D: Permission to use and reproduce the PASS

Mail LIBERTY UNIVERSITY

INBOX CONVERSATIONS BY DATE

All Unread To me Flagged

Thompson, Blair 11:57a
 ▶ Permission to use PASS in my disse
 Jonathan, You are welcome to use Pass...

Liberty University
 Final Invitation: Liberty University S 10:51a
 Dear Jonathan, As you may have learned...

YESTERDAY

Tamela Crickenberger Fri 4:33p
 Freebie Friday = Online Communit
 About | Academics | Admissions | Alumni ...

Michael, Kurt Y (School of Fri 2:17p
 ▶ I found a better instrument
 I was going to review your manuscript to...

Institutional Effectiveness Fri 1:56p
 Watch your inbox
 About | Academics | Admissions | Alumni ...

Permission to use PASS in my dissertation

Schneider, Jonathan Sat 4/25/2015 8:00 PM
 Dr. Thompson, That is Great News !!! You are the best! Thank you so much. Jonathan

Thompson, Blair Sat 4/25/2015 11:57 AM

Jonathan,
 You are welcome to use Pass. Good luck with your dissertation!

Blair

Sent from my iPad

← REPLY ← REPLY ALL → FORWARD ...

LIBERTY UNIVERSITY

Undo

k | Sweep Move to Categories ...

Dissertation Complete



Schneider, Jonathan

Thank you so much! I will set to work this summer publishing some of my findings in Educational Journals. By the way...

Sat 4/23/2016 11:25 AM



Thompson, Blair

10:46 AM

First, congrats on completing your diss, Jonathan! You are welcome to reproduce the PASS as an appendix. No need to send me the diss, but I look forward to hopefully see your findings published in Educational journals in the near future!

Dr. Blair Thompson, Assistant Professor
 Department of Communication
 Western Kentucky University

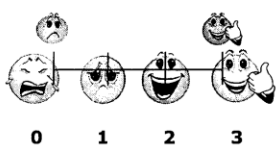


Schneider, Jonathan

Hello Dr. Thompson, I have now completed my dissertation using the PASS survey. I defended my dissertation and now ...

Fri 4/22/2016 9:32 PM

Appendix E: Daily Progress Report (DPR-SP)

NAME: _____	FRI MON TUE WED THU	DATE: _____	GRADE 7 ~ LEVEL 1: BEHAVIOR			
		0 = NOT AT ALL 1 = VERY LITTLE 2 = SOMEWHAT 3 = MOSTLY OR COMPLETELY		DAY 100% = 90 PTS. 90% = 81 PTS. 80% = 72 PTS. 70% = 63 PTS. 60% = 54 PTS.	WEEK 100% = 450 PTS. 90% = 405 PTS. 80% = 360 PTS. 70% = 315 PTS. 60% = 270 PTS.	
Period 1: Mathematics			TEACHER INITIALS: _____			
0	1	2	3	ON TIME /ENTER APPROPRIATELY	TEACHER COMMENTS:	
0	1	2	3	FOLLOW PROCEDURES/ROUTINES		
0	1	2	3	FOLLOW DIRECTIONS AND RULES		
0	1	2	3	CONTROL OF BODY AND SOCIALIZING		
0	1	2	3	RESPECTFUL (ATTITUDE/LANGUAGE)		
Periods 2 & 3: Language Arts & Reading			TEACHER INITIALS: _____		Missing Homework	
0	1	2	3	ON TIME /ENTER APPROPRIATELY	TEACHER COMMENTS:	
0	1	2	3	FOLLOW PROCEDURES/ROUTINES		
0	1	2	3	FOLLOW DIRECTIONS AND RULES		
0	1	2	3	CONTROL OF BODY AND SOCIALIZING		
0	1	2	3	RESPECTFUL (ATTITUDE/LANGUAGE)		
Period 4: FSP Curr. Support			TEACHER INITIALS: _____		Missing Homework	
0	1	2	3	ON TIME /ENTER APPROPRIATELY	TEACHER COMMENTS:	
0	1	2	3	FOLLOW PROCEDURES/ROUTINES		
0	1	2	3	FOLLOW DIRECTIONS AND RULES		
0	1	2	3	CONTROL OF BODY AND SOCIALIZING		
0	1	2	3	RESPECTFUL (ATTITUDE/LANGUAGE)		
Period 5: Math Mastery or Phys. Ed.			TEACHER INITIALS: _____			
0	1	2	3	ON TIME /ENTER APPROPRIATELY	TEACHER COMMENTS:	
0	1	2	3	FOLLOW PROCEDURES/ROUTINES		
0	1	2	3	FOLLOW DIRECTIONS AND RULES		
0	1	2	3	CONTROL OF BODY AND SOCIALIZING		
0	1	2	3	RESPECTFUL (ATTITUDE/LANGUAGE)		
Period 6: Science			TEACHER INITIALS: _____		Missing Homework	
0	1	2	3	ON TIME /ENTER APPROPRIATELY	TEACHER COMMENTS:	
0	1	2	3	FOLLOW PROCEDURES/ROUTINES		
0	1	2	3	FOLLOW DIRECTIONS AND RULES		
0	1	2	3	CONTROL OF BODY AND SOCIALIZING		
0	1	2	3	RESPECTFUL (ATTITUDE/LANGUAGE)		
Period 7: FSP Curr. Support			TEACHER INITIALS: _____			
0	1	2	3	ON TIME /ENTER APPROPRIATELY	TEACHER COMMENTS:	
0	1	2	3	FOLLOW PROCEDURES/ROUTINES		
0	1	2	3	FOLLOW DIRECTIONS AND RULES		
0	1	2	3	CONTROL OF BODY AND SOCIALIZING		
0	1	2	3	RESPECTFUL (ATTITUDE/LANGUAGE)		


(Designed by Dr. Mark Foley, permission to reproduce has been granted 5/10/2016)

Appendix F: Permission to reproduce DPR-SP

LIBERTY
UNIVERSITY.

Junk | Sweep | Move to | Categories | ...

Permission for Reproduction Official Request.



M


[Redacted]

3:37 PM

Dear Jonathan,

You have my permission to reproduce the FSP point sheet/chart in your dissertation for publication in the Liberty University open-access institutional repository, the Digital Commons, and in the ProQuest thesis and dissertation subscription research database.

Best wishes,
Mark Foley, Ed.D.



Schneider, Jonathan

3:31 PM

[Redacted]

Sent Items

Greetings!

I am contacting you because I would like to ask permission to reproduce your instrument/graphic/chart/survey in my Dissertation/Thesis. After defending my Dissertation/Thesis, my program requires me to submit it for publication in the Liberty University open-access institutional repository, the Digital Commons, and in the ProQuest thesis and dissertation subscription research database. If you allow this, I will provide a citation of your work as follows:

(Designed by Dr. Mark Foley, permission to reproduce has been granted)

Thank you for your consideration in this matter!

Appendix G: Daily Progress Report DPR-X

Bh6e35bAZBTAjKbE8qZ8fxOKVa-Khv0H49A/viewform



[Redacted] J. DPRX

Your username **[Redacted]** will be recorded when you submit this form. Not

[Redacted]? [Sign out](#)

* Required

Date

Teacher/Period *

Act Responsible

Do not disrupt; try work, follow directions

0 1 2

Low High

Respect Everyone

No arguing, no mean words

0 1 2

Low High

Keep Safe

Permission to leave, no threats, safe with materials.

0 1 2

Low High

Teacher Comments

(Less than 20 words) Be objective, state the facts.

Send me a copy of my responses.

Submit

Appendix H: Teacher spreadsheet with links to DPR-X

The screenshot shows a Google Sheets spreadsheet titled "J. DPRs" with the following data:

	A	B	C	D	E
1		Student Name	Link to DPR		
2	Period 1	[Redacted]	http://goo.gl/forms/1V...		
3					
4					
5	Period 2	[Redacted]	http://goo.gl/forms/Ai...		
6					
7					
8	Period 3				
9					
10		Mar Mar	http://goo.gl/forms/0...		
11					
12	Period 4				
13					
14					
15	Period 5				
16					
17					
18	Period 6	[Redacted]	http://goo.gl/forms/\...		
19					
20		[Redacted]	http://goo.gl/forms/F...		
21					
22		[Redacted]	http://goo.gl/forms/b...		
23					
24	Period 7				
25					
26					
27					
28					
29					
30					

Appendix I: Parent/Student Website View

Home

Date		Teacher	Behaviors [Effort]	Behaviors [Work Completion]	Behaviors [Compliance]	Behaviors [Focus]	
23/12/2015	18/04/2016						
1 - 15 / 384							
Date	Teacher	Behaviors [Effort]	Behaviors [Work Completion]	Behaviors [Compliance]	Behaviors [Focus]	Teacher Comments	
4/18/2016	P2 Ma	0	2	0	1		
4/18/2016	P6 Sk	1	2	1	2		
4/18/2016	P5	1	2	2	2		
4/18/2016	P3	0	0	0	0	Redirected but very rude. Hood up, disengaged, playing video games and not doing his reflection assignment.	
4/18/2016	P4 (Sc	1	1	1	1		
4/18/2016	B.S	1	1	2	1		
4/5/2016	P5						
4/5/2016	P1	0	0	0	0	Kept trying to fall asleep at table and had to be spoken to about it atleast three times	
4/4/2016	P4 (Sc	2	2	2	2	Movie reward	
4/4/2016	P6 Sk	2	2	2	2		
4/4/2016	P7	0	0	1	0	head down and did not do assignment.	
4/4/2016	P3	2	2	2	2		
4/1/2016	P4 (Sc	2	2	2	2	Movie	
4/1/2016	P7	0	0	0	0	no work completed	
4/1/2016	P3	2	2	2	2	Listened and was respectful during Holocaust introduction.	
1 - 15 / 384							

Appendix J: CICO Student Incentive Survey

Name: _____

CICO Incentives Survey

Check off which rewards you would like to earn when you reach your weekly point sheet goal.

Ice Cream Ticket _____

Eating lunch with three friends at your own table _____

Free time in the gym _____

Free time in the VIP Lounge (not during lunch) _____

Homework Pass _____

Your own idea _____