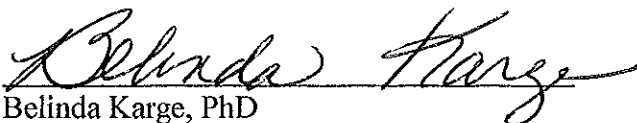
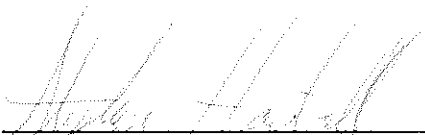


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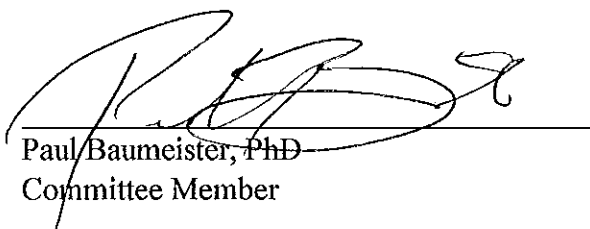
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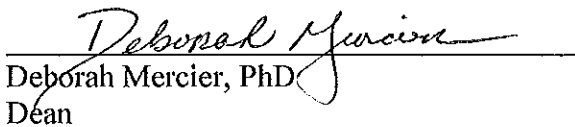


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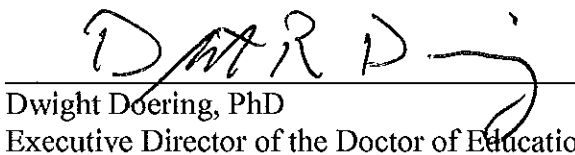


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A STUDY OF THE USE OF DATA TO IMPLEMENT SCHOOL-WIDE POSITIVE BEHAVIOR
INTERVENTIONS AND SUPPORTS IN A LARGE ELEMENTARY SCHOOL

by

Edward J. Eldridge

A Dissertation

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ABSTRACT

In nearly every profession, there is a general understanding that decisions should be informed and driven by data. Even in situations where individuals may not have a clear understanding of what data are needed, people have an innate understanding that more information will normally result in a more desirable outcome. Nowhere should the promise of data-based, high-quality decisions be realized more than in public schools that have answered the call to provide school-wide positive behavior interventions and supports (SWPBIS).

The purpose of this study was to evaluate the role of data in the implementation of SWPBIS in a large elementary school in a Northern California school district. This study assessed school personnel's ability to access and use student data contained in the district's data system. The study also assessed the impact of providing training to school personnel focused on accessing and using student behavior, attendance, and achievement data available in the district's data system. A mixed methods, embedded design of a primarily quantitative quasi-experimental, one-group pretest-posttest design supplemented by qualitative data comprised the methodology for this study.

The results presented in this study contribute to research literature on the use of data in schools to improve student outcomes by providing strong support for increased data training of school personnel. There was variability between participants' ratings of data accessibility and usefulness. Additionally, there were significant increases in participants' ratings regarding the accessibility and usability of data points related to student behavior, attendance, and achievement as a result of data-focused professional development.

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CHAPTER 1: INTRODUCTION

The need to use data driven decision-making in schools is not new. For years, Federal accountability requirements have led states and their public school districts to place increased attention on student outcome data around behavior and academic achievement (Marin & Filce, 2013). Additionally, research has underscored the need for using data in schools as a way of increasing the success of educational practice (Lewis & Sugai, 1999a). One approach that is gaining increased acceptance, as a way to improve student behavior outcomes, is school-wide positive behavior interventions and support (SWPBIS). This systemic approach to behavior management requires adults within the school system (i.e., building principals, teaching faculty, and behavior support personnel) to use data in their decision-making process (Sugai & Horner, 2002). School personnel are expected to adopt and implement a set of processes for monitoring student behavior, including analyzing typical student data related to student achievement, behavior, and discipline.

Statement of the Problem

There are vast amounts of student data in schools as demonstrated by states such as California. During the 2014 school year, California schools collected and forwarded to the state student records that included various distinct points of data, such as grade level, gender, race, ethnicity, attendance, and disciplinary incidents (Warren & Hough, 2013). Warren and Hough (2013) found that coordinated data can be useful to school personnel in making determinations about how effective a school is in developing academic skills and social behavior. The researchers suggested that coordinated data systems can be an effective tool for evaluating the impact of educational policies on student achievement and behavior.

The results of Kincaid, Childs, Blase, and Wallace's (2007) research indicated that school personnel may not sufficiently use data to implement and sustain system-wide initiatives such as

SWPBIS. This research focused on school teams that had been implementing school-wide behavior supports in Florida for at least one year. Participating school teams completed self-assessments and responded to questions about barriers and facilitators regarding the implementation of behavioral support school-wide. In their survey of educators, Kincaid et al. (2007) found that the lack of data use was found to be one of the most commonly reported barriers to effectively implementing SWPBIS. The research showed that non-use of data can negatively impact education innovation efforts such as school-wide behavior management.

A factor that may contribute to school personnel's penchant for not using data may be that they have not always had to use objective data sources as the foundation for general educational decisions. Earl and Katz (2002) found that traditionally, educational decisions were made based on the judgments of those in authority according to the school hierarchical structure. In their study, they examined the implications of how school and district leaders interact with data that covers all aspects of the educational entities under their purview. The researchers observed that data were not instrumental in the decision-making process, and school personnel were not required to habitually seek out data, become data literate, or incorporate data into school culture. Consequently, schools that operate from a data-uninformed vantage point are missing an integral part of the ongoing cycle of analysis that brings new insights, learning, and changes in practice as they implement educational initiatives (Earl & Katz, 2007) including SWPBIS.

It can be helpful to SWPBIS implementers to have an understanding of the background and evolution of this systemic approach to behavior management (Horner, Sugai, & Anderson, 2010; Lewis, Barrett, Sugai, & Horner, 2010; Sugai et al., 2000). The literature review located in chapter two of this document explores much of the historical data, illustrating that initial

efforts at managing behavior, including punitive classroom management and zero-tolerance practices, were not effective for bringing about sustained improved student behavior (Christie, Nelson, & Jolivette, 2004; Leone, Mayer, Malmgren, & Meisel, 2000; Skiba, 2002). The literature review provides strong support for the use of data-informed SPWBIS as an effective alternative (Bradshaw, Koth, Bevans, Ialongo, & Leaf, 2008; Bradshaw, Mitchell, & Leaf, 2010; Horner et al., 2010; Horner et al., 2009; Lewis et al., 2010; Nelson et al., 2009). The multiple support tiers of positive behavior interventions and supports (PBIS) are discussed, including the approach's universal tier where all SWPBIS activities take place. Understanding the key features of SWPBIS such as the use of research-based classroom practices, school support systems, and data can also strengthen implementation efforts.

There are important factors that impact the use of data by members of school teams (Kerr, Marsh, Ikemoto, Darilek, & Barney, 2006; Lachat & Smith, 2005). Accessibility of data is discussed in chapter two as data inaccessibility could pose a barrier to SWPBIS implementation. The data use implications related to timely and valid data are also reviewed. How implementation efforts are impacted once individuals are trained on data collection and analysis are also a focus in chapter two.

Purpose of the Study

School personnel in elementary schools have varying levels of skill in using data and information system resources that facilitate data collection, analysis, and data-informed decision-making. Yet, the research indicates that schools seeking to successfully implement a system-wide behavior support plan must be able to effectively identify, collect, and analyze data. The purpose of the present study is to resolve the variability of data collection and analysis for

SWPBIS implementation as the successfulness of this approach is dependent upon on a guiding team of educators who use data to make program decisions.

Significance of the Study

This study was undertaken to contribute to the overall knowledge base about effective data practices for school personnel who are implementing SWPBIS in an elementary school setting. Specifically, this study fills a gap in PBIS implementation research as it focuses on a large elementary school's SWPBIS team's collection and analysis of behavior incident data, including identifying barriers to the effective use of data and the impacts of data-oriented professional development. As a result of the public reporting of the number of students who are suspended or otherwise involuntarily removed from school in California, there is increased accountability for schools that exclude students from instruction in response to their problem behavior (Robinett, 2012). SWPBIS teams that are versed in using data can facilitate the implementation and sustainability of interventions that promote improved student behavior (Lewis, Barrett, Sugai, & Horner, 2010).

Definitions of Terms

PBIS: PBIS is defined in this study as a technology of behavior supports provided at universal, targeted, and intensive tiers or levels (Sugai & Horner, 2002). The approach builds on the field of applied behavior analysis, and it employs a progressive systems change process designed to decrease individuals' problem behaviors, increase their social skills, and enhance their quality of life (Carr et al., 2002).

Positive behavior: Positive behavior is defined in this study as being inclusive of those social skills that are associated with success and personal satisfaction in a variety of community settings, including social, recreational, and academic (Carr et al., 2002). Interventions and

supports are defined in this study as the vast array of educational methods designed to inculcate, strengthen, and increase positive behavior (Carr et al., 2002). School-wide PBIS or SWPBIS is defined in this study as the use of PBIS's repertoire of prevention strategies on a universal, school-wide scale to achieve maximum efficacy for students. These prevention strategies are premised on the establishment and communication of rules, expectations, desired social and academic behaviors, and school activities that accommodate the vast majority of students (H. M. Walker et al., 1996).

Theoretical Framework

The theoretical framework for this study is based on the conceptual foundation of SWPBIS as described by Lewis, Barrett, Sugai, and Horner (2010), leading scholars at the National Technical Assistance Center on Positive Behavioral Interventions and Supports (PBIS Center). At its foundation, effective SWPBIS requires an emphasis on data to guide decisions “about what practices should be put in place to support student learning and social behavior” (Lewis et al., 2010, p. 3). Another foundational element of SWPBIS that is of equal importance is the focus on school support systems that are essential for building school personnel's articulacy with innovative or revised practices for addressing student behaviors (Sugai et al., 2000). The essential premise is that SWPBIS requires fluency with data, practices, and support systems to engage in the required basic problem solving needed to sustain implementation efforts (Lewis et al., 2010).

The use of data for decision-making in SWPBIS cannot be overstated. Horner et al. (2010) theorized among the crucial elements for developing capacity of schools to implement behavioral interventions, a continual use of data is essential. Supporting research has identified a culture of collecting and using data to drive the decision-making process as an acute predictor of

SWPBIS sustainability (Coffey & Horner, 2012). In Coffey and Horner's study of 117 districts across six states that were engaged in SWPBIS implementation, the researchers found that use of data to plan and make necessary adjustments increased the likelihood of successful implementation of the educational innovation. The theoretical importance of using data to inform decisions about educational practices has been validated by various researchers (Earl & Katz, 2002; Horner, Sugai, Todd, & Lewis, 2005; McKevitt & Braaksma, 2004; Means, Padilla, DeBarger, & Bakia, 2009). Thus, it is logical to understand why SWPBIS teams charged with making and monitoring decisions aimed at reducing or eliminating student problem behaviors are dependent on data to problem solve and make informed decisions.

Increasingly, educators are employing the use of computerized technology to warehouse and increase access to student data; yet, the increase in access to this data has not necessarily translated into improved practice (Wayman & Cho, 2008). Wayman and Cho observed that the challenge for educators to make use of data requires close monitoring and support from building and district administrators. School personnel may view training as one form of support to encourage data use. Though data systems contain tools that can help educators correct flawed analyses of data, they commonly do not accomplish this without additional training (Means et al., 2009). The researcher of the current study sought to determine how providing additional information on analyzing and using data would impact the use of data by a SWPBIS leadership team.

Research Questions

In order to explore how school personnel at a large elementary school manages student behavior, and how they collect, analyze and use data, this study examined and answered the following research questions:

1. To what extent did SWPBIS teams have access to behavior data that informed their decisions on how to facilitate students' development of behavioral skills that would help them be successful in school?
2. To what extent do SWPBIS teams perceive the usefulness of accessible data in the district's data system?
3. What impact did professional development have on SWPBIS team members' ability to access and use student data?
 - a. Were there increases in the team members' perception regarding data accessibility and usefulness from the pretest survey to the posttest survey, including the frequency in which data were analyzed and shared?
 - b. If there were increases in team members' data perceptions, were the increases significant?

Search Terms

I searched several research databases, including Educational Resources Information Center, EBSCO, PsycARTICLES, PsycINFO, and Google Scholar. The search terms “positive behavior,” “positive behavior supports,” “positive behavior interventions and supports,” “social and emotional learning,” and “student data” were used as keywords. The search strategy did not include a date limit. The keyword searches produced a robust result of potential sources, including articles, journals, and books. Key manuscripts and journals were hand searched to ascertain studies that have not been electronically indexed in databases. Sources were immediately excluded if they were not peer-reviewed.

Limitations

There were limitations to this study. The scope of this study was limited to research at only one elementary school in the selected Northern California school district and, therefore, results may not be generalizable to similar contexts. The study was conducted with one of the two large elementary schools in the entire school district. Additionally, the study focused on data collected from members of the school's SWPBIS leadership team, as opposed to soliciting information from all school personnel, including those who were not members of the SWPBIS leadership team.

The school personnel participating in this research included a site principal, assistant principal, teachers, and counselors who served on the SWPBIS team. Since the respondent pool and the participants were limited to SWPBIS team members, a larger sample, including all school stakeholders such as teachers, counselors, students, parents, and/or community members, may have provided additional insight by adding information according to their respective perception.

Delimitations

There were several delimitations in this study that served to narrow its scope. For instance, only one large elementary school in the district was the subject of this primarily quantitative study that was supplemented by qualitative case study procedures. As such, using a single school might be interpreted by some to be a delimitation. While it is plausible that selecting an additional elementary school in the district would have resulted in a broadened perspective, an even greater perspective would have been gained by selecting all elementary schools in the district. However, the cost for gaining a broader perspective could have been the loss of the focus on the individual perspective gained from the selected site. Because only a single

elementary school was selected, I do not encourage generalization of the results of this study to other elementary schools.

Another possible delimitation was the fact that the study focused solely on the data use habits of SWPBIS leadership team members. Had the study incorporated other school personnel, including teachers and classified staff not on this team, this may have necessitated a more comprehensive scope of questions that facilitated the acquisition of greater insight into how data were used across the school to assist in behavior management. Also, the survey instruments used in this study largely consisted of multiple-choice, forced-response answers, both of which added to the narrowing of possible responses by participants. Open-ended questions regarding data-use patterns and frequencies contributed to an understanding of the SWPBIS team's practices.

Organization of the Study

Chapter one of this current study provides an overview of the study. This chapter includes the statement of the problem, the purpose of the study, and the significance of the current study. A definition of terms, the theoretical framework, an introduction of the research questions, review of search terms, and the limitations and delimitations of the survey are also included in the first chapter. Chapter two includes a review of literature relevant to the study. This literature review covers several germane topics, including a historical background on PBIS, an overview of PBIS support tiers, a review of key features of SWPBIS, research-based classroom practices, school support systems, and the use of data. Chapter three presents in detail the methodology used in this study. Study participants, sampling procedures, instrumentation, data collection, and data analysis details are contained in the third chapter. Chapter four presents the results of the study based upon the research questions presented in the first chapter. The fifth and last chapter presents the concluding information for this study.

Chapter five presents a discussion of the results in the fourth chapter. A summary of the study, implications for practice, and recommendations for further research are included in this final chapter.

Summary

This chapter introduced the concept of the vast amounts of data that are available and collected within school buildings and the challenges that school personnel may have in making sense of various data sources. Issues that may impede the use of data by educators were discussed, and the importance of overcoming impediments to data use to effectively implement SWPBIS were presented. From the vantage point of a large elementary school, accountability implications of monitoring the success of student behavior initiatives were discussed. Based on the theoretical framework of educators using data to inform and guide their decisions, this study's research questions were introduced.

CHAPTER 2: REVIEW OF LITERATURE

The historical background of PBIS provides the starting point for the literature review. This section begins with a background of the traditional and prevalent classroom management practices. The history of zero-tolerance policies and the related use of exclusionary discipline are also discussed. The conclusion provides a discussion on the development of PBIS from special education to the general educational programs. Subsequently, this review of literature discusses PBIS's three tiers of supports, including the universal level components which form the SWPBIS. I then discuss essential SWPBIS implementation factors that form the foundation of the approach. The chapter is completed with a discussion on the important role of data used by school personnel to initiate and sustain implementation efforts such as SWPBIS.

Historical Background of PBIS

This section explores the historical background of PBIS. Traditional classroom management practices are reviewed. Subsequently, the evolution to zero-tolerance policies is discussed. This discussion is followed by an examination of the development of PBIS in special education. Finally, this section concludes with the expansion of PBIS to general education environments.

Traditional Classroom Management Practices

Maintaining an orderly classroom has been considered to be an important precursor to facilitating the educational process. However, determining the most effective classroom management practices conducive to learning has been an ongoing evolutionary process in the United States public educational system. From the establishment of the American colonies through much of the 1900s, the use of aversive measures, including corporal and exclusionary discipline, was an accepted means for teachers to establish and maintain classroom control

(Rancifer, 1995). These reactionary practices were designed and implemented as response mechanisms to deal with challenging behavior exhibited by students.

During the late 1900s, the value of corporal discipline came under extensive scrutiny by the psychological community and society in general, especially as students with disabilities were seen as the recipients of these controversial interventions (Sailor, Dunlap, Sugai, & Horner, 2008). Sailor et al. (2008) found that with the change in societal views trending away from the use of punishers to modify behavior, aversive discipline measures are no longer enjoying wide acceptability as appropriate intervention as evidenced by lawsuits filed in federal courts challenging their use. Wasserman (2010) found that legal developments throughout the United States had resulted in the extinguishment of corporal punishment in schools in all but 20 states. However, the use of the traditional aversive technique of exclusion was left largely intact as a tool to be used in the classroom management repertoire.

Research has demonstrated that there is a tendency for educators to use aversive practices to punish students for displaying problem behavior. Horner et al. (1990) defined stimuli used to punish aversive because the stimuli is meant to evoke a response to escape or avoid the stimuli. Quite often, exclusionary practices are aversive in their application as they are intended to use removal from the instructional environment as a consequence for displaying problem behavior (Skiba & Peterson, 1999). Skiba and Peterson (1999) found that the practice of excluding or suspending students from the instructional process for non-violent problematic behavior does not result in improved student social skills development or avoidance of further misbehavior.

Unfortunately for many students, history shows that educators commonly relied on reactive, aversive approaches to exclude students from school rather than address the problematic behavior in a meaningful way. Prevalent disciplinary tactics encompassed discipline

referrals to the office, on-campus suspension, off-campus suspension, and expulsion (Sprague & Horner, 2006). These types of practices served to provide relief to classroom teachers and administrators. Rather than supporting students in their acquisition of social behavioral skills, such practices have been shown to alienate students, reinforce problematic behavior in suspended students, and foster negative perceptions in non-suspended students, in addition to having a detrimental effect on the academic growth of excluded students (Dupper, Theriot, & Craun, 2009).

Zero-Tolerance Practices

Despite the dubious records of effectiveness, the use of school discipline grounded in exclusionary measures were re-energized in response to the increased reporting and awareness of school violence in the late 1980s and early 1990s. In 1989, so-called “zero-tolerance” policies, characterized by predetermined punishment schemes, began cropping up in schools across the country for drug and gang-related violations (Skiba & Peterson, 1999). Due to their required consequences for identified rule infractions, these guidelines stood in sharp contrast to traditional school disciplinary processes. These policies replaced the traditional exercise of school administrator discretion that was informed by (a) specific circumstances surrounding a case, (b) prior knowledge of the specific participants, and (c) professional judgment about school safety ramifications (Stader, 2004).

Skiba and Peterson (1999) reported that the popularity of zero-tolerance policies quickly increased during the 1990s, being bolstered by the signing of the Federal 1994 Gun-Free Schools Act (GFSA). The intent of GFSA was to ensure that students did not bring weapons on school campuses. The GFSA contained only one predetermined consequence, which was the mandated expulsion from school for at least one year for a student who possessed a weapon on school

grounds. By 1997, approximately 90% of schools had adopted expansive zero-tolerance guidelines – many of which were concerned with “weaponless” violations of school rules (Stader, 2004).

Skiba (2002) and Stader (2004) illustrated the manner in which state and local educational leaders stretched zero-tolerance policies to incorporate a host of infractions that were not contemplated by federal statute. Researchers Skiba and Peterson (1999) found that implementation of zero-tolerance policies evolved to include increasingly broad concepts of intolerable student behaviors, removing the resolution of these behaviors from the traditional disciplinary process used in schools. Relevant research demonstrated increases in suspensions for even the most minor offenses such as the unauthorized use of a pager (Skiba & Peterson, 1999). Districts that sanctioned zero-tolerance policies increased their reliance upon exclusionary sanctions, enacting the guaranteed suspension or expulsion for students who displayed certain problem behaviors which were not contemplated by the GSFA, including drug, alcohol, and fighting (Skiba, 2002; Stader, 2004).

Research has shown that students who displayed the most challenging behaviors did not improve their conduct in response to exclusionary practices imposed upon them (Christie et al., 2004). While exclusionary sanctions such as school suspension may have been effective at interrupting the instructional process for students, there is little evidence to support its effectiveness at producing positive and sustained behavioral change. Christie et al. (2004) obtained evidence that removal from the classroom is commonly used in response to students’ negative conduct. The researchers found that exclusion from the learning environment does not resolve the behavior it is purported to address. Suspending students seems to delay or deny the addressing of their behavioral learning needs. Various studies have documented that repeat

offenders accounted for up to 40% of school suspensions, further indicating that this commonly used technique for disciplining violations of zero-tolerance rules is not effective at rehabilitating challenging student behavior (Skiba, 2002).

PBIS in Special Education

Students with identified special learning needs were disproportionately at-risk of being subjected to exclusionary practices than their counterparts in general education environments. Research has found that while students with special needs accounted for only 11% of the student population nationally, they comprised approximately 20% of the nation's suspensions (Leone et al., 2000). Leone et al. (2000) demonstrated that students who received special education services were typically suspended for non-violent behaviors that were substantially similar to behaviors displayed by their counterparts in general education. Rather than address these students' behavior needs with proactive approaches that support the development of positive behavior, suspension appeared to be educators' disciplinary "intervention" of choice.

During the 1980s, the education community recognized the crisis of students with disabilities being systemically subjected to exclusionary measures by those in the educational community. What grew from this recognition was an identified need for an improved process for selecting, implementing, and documenting behavioral interventions for students with behavior disorders. This finding inspired University of Oregon researchers to conduct a series of applied investigations, including demonstrations, research studies, and related evaluation projects. The results of these efforts suggested prevention, research-evidenced practices, data-informed decision-making, school-wide systems, explicit instruction in social skills, team-based professional development and implementation, and actual student outcomes should receive greater emphasis in the management of student behavior (Sugai & Simonsen, 2012).

Around the same time that faculty at the University of Oregon were researching improved behavior intervention practices, the U.S. Department of Education began funding a national research and training center to be located at the university for the purpose of studying practices that managed and promoted desired behavior positively (Sailor et al., 2008). One of the initial contributions of the PBIS Center to the field of behavior management was the introduction of the Positive Behavioral Support (PBS) approach for individuals with severe disabilities (Horner et al., 1990). PBS, which subsequently became known as PBIS, was premised upon (a) using research-based behavior science, (b) supporting behavior through multiple intervention elements, (c) improving student outcomes, and (d) organizing supports to sustain behavior improvements (Sailor et al., 2008). Sailor et al. (2008) observed that PBIS reliance upon research-based behavioral science and its related focus on the environment's role in behavior management was consistent with behavioral science research in applied behavioral analysis (ABA).

Within the literature on the study of human behavior, in their seminal research, Baer, Wolf, and Risley (1968) described applied behavior analysis as a systematic process of applying interventions that are rooted in the principles of learning theory for the purpose of improving, by a meaningful degree, those social behaviors that are deemed to be of significance. The researchers posited that one aim of ABA was to improve upon socially important behaviors that contributed to a non-disruptive educational environment. Similar to ABA, one of the core concepts upon which the PBIS framework is constructed is the understanding that behavior is not constant; it is learned, functional, and changeable through a system application of techniques (Baer et al., 1968). Building upon this foundation, PBIS has developed into a technology that promotes the development of desired behaviors and reduction of challenging behaviors through

the intentional design of the environment by using supports that are socially acceptable and delivered in natural contexts. Since its inception, the approach utilized data-informed processes such as functional behavior assessments and evidence-based antecedent manipulations, teaching strategies, and reinforcements of desired behavior to result in a more inclusive educational experience for students with special learning needs (Sailor et al., 2008).

When Congress reauthorized the Individuals with Disabilities Education Act (IDEA) in 1997 and in 2004, it further contributed to the changing tide to implement effective behavior interventions and supports based on research. The IDEA reauthorizations incorporated grant-based funding for the expansion of the PBIS Center (www.pbis.org) (Sugai & Simonsen, 2012). The legislations also made funding available to districts and schools to access technical assistance for the purpose of implementing and sustaining positive behavior supports for students with disabilities. The PBIS Center was designed to serve as the national service provider to schools. While it is headquartered at the University of Oregon, the Center's work is carried out through partnerships with researchers, practitioners, and well-respected providers of specialized supports representing various parts of the country including Illinois, Kansas, Kentucky, Missouri, and Florida.

Expansion of PBIS to General Education

Assistance provided by the PBIS Center includes the development and dissemination of school climate and behavioral support resources – with a focus on the systemic use of data to guide the selection of practices used by state, district, and school leadership teams. Service models are designed to develop clients' internal capacities to create, implement, and problem-solve to overcome barriers to PBIS implementation and build a comprehensive continuum of behavioral interventions and supports (Lewis et al., 2010). More than 16,000 schools across the

country have utilized the PBIS Center to help shape their framework of positive behavior supports through professional development and technical assistance as of 2012 (Sugai & Simonsen, 2012). This was up from nearly 7,700 schools that had received support through 2008 (Sailor et al., 2008).

The PBIS Center's growth in demand for technical support may stem from the recognition that the approach's effectiveness is not limited to students with disabilities. PBIS's basic logic of helping students develop expected behaviors through explicit teaching, intertwined with high rates of positive feedback, has been associated with improved school-wide outcomes (Lewis et al., 2010). Various research studies found that schools that implement PBIS with fidelity use evidence-based classroom management practices, attain higher levels of staff connectedness, experience reductions in office discipline referrals (ODR) and suspensions, and focus more on academics than non-PBIS schools (Bradshaw, Koth, et al., 2008; Bradshaw et al., 2010; Horner et al., 2010; Horner et al., 2009; Nelson et al., 2009; Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008; Waasdorp, Bradshaw, & Leaf, 2012).

Specifically, Bradshaw et al. (2010) found that students who attended PBIS-trained elementary schools were less likely to receive an ODR or be suspended than their counterparts attending non-PBIS schools. Reductions in these indicators of negative student behavior could be construed as evidence that the PBIS system of research-based strategies contributes to a reduction of students' challenging behaviors. Logically, the less time teachers need to dedicate toward addressing problem behaviors results in more time they can focus on other areas of educational importance such as collaboration and academics. Additionally, research has confirmed that staff working in PBIS schools are more likely to collaborate around helping students succeed socially and academically (Bradshaw et al., 2008).

Overview of PBIS Multiple Support Tiers

This section discusses the three support levels that comprise positive behavior interventions and supports. The tiers include universal, targeted, and individual interventions and supports, and the use of data to inform interventions and student progress within and across levels (Anderson & Kincaid, 2005). Universal interventions and supports are those that are provided to all students, making them the foundation of school-wide PBIS (SWPBIS). Targeted supports are provided to students who need it based on their lack of response to interventions at the foundational level. More intensive and individualized help is provided to students for whom targeted supports have proven to not adequately improve positive behavior. Taken together, these layers form a strategic continuum of supports for developing positive behavior (Sugai et al., 2000). As the primary focus of this study is the role of data in implementing SWPBIS, a brief discussion on PBIS individualized and targeted supports is provided, and it is then followed by a more in-depth analysis of universal supports or SWPBIS.

Individualized Interventions and Supports

Implicit in the PBIS approach is the understanding that all students may not respond to all behavior supports in the same way. Individualized interventions represent the operational recognition of this realization for students with whom only universal and targeted assistance have proved to be ineffective. Particularly, the focus at this layer is on students who continue to exhibit challenging behaviors (Lewis, Powers, Kely, & Newcomer, 2002). One of the widely used individualized support strategies is the comprehensive assessment via the functional behavior assessment method that originated in ABA. This data-informed experimental assessment method is used to determine the purpose of a student's behavior as part of an overall strategy to influence the behavior in a positive direction (Carr et al., 2002). Carr et al. (2002)

noted that functional behavior assessments are viewed as the exemplary model for analyzing behavior with the goal determining the antecedent factors for specific behaviors of interest. Despite their recognized value for analyzing behavior, the researchers concluded that individualized processes like functional behavior assessments are only feasible to implement for small groups of students due to resource and time constraints. Thus, the use of functional behavior assessments is recommended for the one to five percent of students who would be expected to need highly individualized support (Bradshaw, Reinke, Brown, Bevens, & Leaf, 2008).

Targeted Interventions and Supports

The realization that all students are unique individuals with their own dispositions that contribute to how they react to behavioral interventions cannot be overstated. Bradshaw, Reinke, et al. (2008) estimated that targeted or secondary interventions are effective for approximately five to ten percent of students. These are for students who do not respond to support components at the universal level, resulting in their progression toward a use of secondary, more individualized strategies. Hawken and Horner (2003) found that such students typically are in need of greater levels of practice in learning behavior expectations and may require academic modifications to ensure success. George, White, and Schlaffer (2007) found that such specialized forms of assistance are designed to address students with continuing challenging behaviors, increasing the likelihood of student success in acquiring functional positive behaviors.

Typical interventions found at the secondary level include those that can be provided across students in efficient and targeted manners (Campbell & Anderson, 2011). Check-in/check-out is an example of such targeted assistance. Various characteristics of this intervention as described by Campbell and Anderson include students (a) having brief, daily

meetings with intervention coordinators in the morning and / or afternoon, (b) being rewarded and deducted points for exhibiting desired and challenging behaviors, and (c) receiving feedback from teachers at preset timeframes. The effectiveness of this second tiered intervention has been recorded to show researchers have documented the effectiveness of this second tier intervention for students with whom universal supports did not suffice (Hawken & Horner, 2003).

Universal Interventions and Supports – SWPBIS

The aforementioned individualized and targeted levels demonstrate the continuum of progressive strategies for the few students who need to access them as evidenced by their unacceptable levels of challenging behavior. It is estimated that 80-90% of students school-wide will not access these graduated levels of PBIS as they will be responsive to universal components. Interventions and supports at the universal level comprise the foundational behavior interventions and supports (SWPBIS) system that all students receive to improve student outcomes (Bradshaw, Reinke, et al., 2008; Horner et al., 2005). Intended student outcomes include providing students the behavioral assistance needed to ensure that schools are safe environments that facilitate student academic and social skill development (Horner et al., 2005).

Key Features of SWPBIS

There are key elements of SWPBIS. These elements include research-based classroom practices such as explicit teaching of behavioral rules, use of behavioral prompts and reminders, reinforcement of positive behaviors, and engaging instruction. School support systems and the use of data to achieve improved students outcomes are also provided as key elements of SWPBIS (Horner et al., 2005; Simonsen, Sugai, & Negrón, 2008; Sugai & Horner, 2002). Each of these elements and their related features are discussed in the following sections.

Research-Based Classroom Practices

Research supports the finding that the effective prevention of difficult behaviors at the universal tier is essential for decreasing the development of severe problem behaviors in schools (Lewis & Sugai, 1999b; Sugai & Horner, 2006; H. M. Walker et al., 1996). Additionally, Sugai and Dickey (2006) noted that universally applied behavior support interventions are instrumental at improving classroom and school climate, decreasing reactive behavior management, and maximizing academic achievement. The following are some of the most commonly used school-wide interventions identified by researchers: (a) explicit teaching of behavioral rules, (b) use of prompts and reminders to reduce displays of problem behaviors, (c) reinforcement of positive behaviors, and (d) engaging instruction (Childs, Kincaid, & George, 2011; George et al., 2007). Taken together, these components promote school-wide classroom management that prevents problem behaviors and facilitates student behavior and academic success.

Explicit Teaching of Behavioral Rules

The rules of expected behaviors form the foundation of effective classroom management that prevents student misbehavior and facilitates student success (Newcomer, 2009). These rules promote student behaviors determined to be conducive to a productive learning environment while they anticipate behaviors disrupting to the educational process. Rules communicate desired behaviors to students and they identify positive replacement behaviors for challenging ones. For example, a rule requesting students to keep their hands, feet, and objects to themselves clearly delineates the desired behaviors. If a student is inclined to misappropriate either of the subjects of the rule, the alternate positive behavior is recognized and communicated. During the teaching of rules, teachers may adopt an instructional plan that includes (a) an explanation of the rule, (b) the underlying rationale, (c) a demonstration of the behavior that is in alignment with

the rule, and (d) opportunities for students to practice rules and receive feedback (Safran & Oswald, 2003).

Rules that are stated in positive and specific terms can aid in the explicit teaching of expected behavioral by reducing any chance of students becoming confused about the rules' meanings. Student behavioral learning is also helped by rules that are stated objectively so that students and staff can know if it has been followed. Developing rules that are age-appropriate and that use brief wording facilitates student understanding and compliance. Finally, a key aspect of behavioral instruction is to limit the number of rules to three-to-five to facilitate student deep learning of a few essential behaviors, thereby improving their chances of retaining and applying the rules of behavior. Research has found that there is a correlation between the extent to which students are knowledgeable of behavioral rules and how to meet them and their displays of appropriate behavior (Newcomer, 2009).

Use of Behavioral Prompts and Reminders

While the teaching of behavioral rules is a foundational component for preventing student misbehavior within a SWPBIS framework, this practice is bolstered by the strategic use of prompts and reminders to prevent escalation of low-level problem behaviors. Prompts and reminders can come in many forms and can be verbal or non-verbal. For example, the use of a small blinking light in one school served as a visual reminder to students that one of their rules was them to be silent when the blinking light was on (Safran & Oswald, 2003). Effective prompting can reinforce behavior rules by cuing students of their expected adherence. Positive behavior reminders provided by school personnel to students can also be effective at helping students remain in in the learning environment by promoting desirable behaviors (George et al., 2007).

Prompting and reminding students of appropriate behaviors is a strategy upon which schools can build upon with complimentary measures to help students avoid participation in the disciplinary process. For example, George et al. (2007) reported that a color-coded card system that teachers use to encourage students to disengage in misbehaviors and return to task can work well with the use of reminders and prompts. In their study, teachers used such a system as part of a strategy to provide students multiple opportunities to correct misbehaviors by requiring students to pull a different colored card for various levels and frequencies of infractions prior to being sent out of their primary instructional environment. One color was designated to signify a first-time warning. An additional color was chosen to represent a second warning. If students continued to display challenging behavior, they were directed to take a third colored card, signifying that the child was to leave the classroom and report to an alternate classroom or the office. In addition to effectively supplementing behavioral reminders and prompts, consistent school-wide use of card systems for students with higher incidences of misbehavior facilitates more systemic problem solving to address student behavior needs (Metzler, Biglan, Rusby, & Sprague, 2001).

Reinforcement of Positive Behaviors

Positive reinforcement of appropriate social behaviors is an important feature of an effective school-wide behavior management approach (Simonsen, Fairbanks, et al., 2008) that goes hand-in-hand with the use of prompts and reminders. Whereas the latter strategy can be used to precorrect and correct misbehavior, reinforcement of prosocial skills consistent with the school's rules of behavior encourages students to exhibit behavior aligned to these rules. There is strong research evidence that supporting students in their acquisition of new desirable behaviors positively impacts the climate of the instructional environment (Epstein, Atkins,

Cullinan, Kutash, & Weaver, 2008). This finding is consistent with Epstein et al. (2008) finding that preserving a positive school climate is due in part to how consequences are managed to ensure that appropriate behavior is reinforced and inappropriate behavior is not.

Epstein et al. (2008) observed that problem behaviors are often reinforced when they result in the student receiving something they were seeking (e.g. attention, access to a preferred activity) or escape from something they wanted to avoid (e.g. demands, reprimands, difficult tasks). It would stand to reason that consequences which do not result in a student achieving the intended goals of problem behavior – coupled with positive recognition and praise for desired behavior – is likely to increase the student's displays of desired behavior. Research has long held that a student's particular behavior will increase or decrease if it is followed by positive or negative reinforcers, respectively (Skinner, 1953). Thus, it would seem logical that increasing the frequency with which students are encouraged for appropriate behaviors will increase the number of positive student interactions. If the goal is to encourage student's appropriate behavior, research demonstrates that use of rewards such as praise, recognition, special privileges, points or other reinforcers that are integrated into the classroom are particularly effective (Epstein et al., 2008).

Engaging Instruction

Students who are receiving engaging instruction are more likely to display positive behavior. Increasing student engagement in academic instruction is an essential part of increasing their time on-task and positive behavior (Parsonson, 2012). Additionally, teachers who engage students in academic instruction create an environment in which greater opportunities are available to praise and reinforce students for appropriate behaviors. Such an environment is consistent with the earlier discussion regarding reinforcement of positive

behaviors in this paper. Teachers can achieve the creation of engaging learning by the thoughtful use of antecedent and consequential interventions. The following are a few examples of engagement interventions that were found to increase student engagement and reduce problem behavior.

Increasing choice and access to student's preferred activities has been observed to positively impact student engagement and reduce problem behavior (Parsonson, 2012). Parsonson found that students typically respond favorable when their own interests serve as the basis of learning activities. The researcher observed that students respond positively when they are involved in the decision processes of selecting (a) themes in which to devote additional instructional time, (b) the sequencing of instructional topics, and (c) the skills to be emphasized. These conditions permit students to exercise limited choices, enabling them to move from a pure reactive role to a proactive, partial controller of their learning. A survey of teacher's beliefs about increasing motivation in disaffected students confirmed the student engagement benefits as teachers reported that giving students choices is a strong motivational technique to enhance the learning environment (Guthrie & Davis, 2003).

Strategic sequencing of learning activities can also improve student engagement. Parsonson (2012) indicated that engagement is positively affected when activities are sequenced so that longer and more difficult tasks are interspersed with tasks that are easier and brief. The researcher observed that appropriate task sequencing makes for an engaging learning environment as it has been found to reduce class disruptions. Student behavior is positively affected by the resulting enhanced transitions between learning activities. Parsonson also noted that factoring in student break schedules into the sequencing of topics can have a profound impact on student learning. For example, the researcher noted that the act of scheduling tasks

that require active learning after rest and lunch breaks is an effective method of enhancing student transitions to new activities.

Teacher checking for understanding can foster wide participation that contributes to broader student engagement. Findings from Gardner, Heward, and Grossi (1994) research study indicated that students were 14-times more likely to actively respond to teacher questions directed at a class when answering required a short written response as opposed to simply raising their hand. Additionally, the researchers noted the academic benefit of engaging students in written-response formative assessments as all students who participated in this intervention outperformed their counterparts on subsequent tests administered the following day and two weeks following instruction.

School Support Systems

In addition to research-based classroom practices, essential characteristics of SWPBIS are the systems of support embedded within the approach. Administrative leadership, team-based implementation, staff commitment, dedicated time, fiscal resources, and information systems are all necessary factors (Horner et al., 2005). This section reviews each of these supports.

Administrative Leadership

The full support of a school's administrative team, including the building principal, is a non-negotiable aspect of successful and sustained SWPBIS (McIntosh et al., 2013; Simonsen, Sugai, et al., 2008). Lewis (2005) described school principals, as being critical to SWPBIS as this individual typically possesses the leadership that is the recommended vehicle to affect other essential implementation activities. Particularly, the establishment of a school-wide leadership team to design, introduce, and train on the innovation falls under the purview of this school

leader. The principal's leadership as spokesperson for the initiative is essential as they serve as the "face" of effort, providing public statements of support for the behavioral interventions and supports that reinforce the leadership team's efforts. Principal support, including their active participation on the school's leadership team, is important for helping develop the commitment of staff. Frequently attending and contributing in team meetings can send a strong message of SWPBIS support that facilitates staff commitment. Additionally, principal leadership in securing sufficient personnel, meeting time, fiscal resources, and information systems can reduce barriers to SWPBIS implementation (Molloy, Moore, Trail, Van Epps, & Hopfer, 2013).

Team-Based Implementation

A sustained school-wide implementation effort necessitates the design, recruitment, and collaboration of a school leadership team (Bambara, Nonnemacher, & Koger, 2005; McIntosh et al., 2013; Simonsen, Sugai, et al., 2008). At the most rudimentary level, a team consists of two or more individuals combining their efforts to achieve a common goal (Janney, Snell, & Elliott, 2000; Thousand, Villa, & Nevin, 2006). For the purpose of instituting supports across a school, it is recommended that effective teams be designed to include five to nine members. The recruitment of team members should ensure that there is representation across stakeholders such as the school's administration (including the school principal), teaching faculty, behavior support personnel, and paraprofessional staff (Horner et al., 2005).

Researchers observed that effective teaming for the purpose of leading school-wide implementation of PBIS is centered around collaboration and evidence-informed decisions (Bambara et al., 2005). Additionally, these researchers suggested that effective team members, individually and collectively, are committed to the use of student-centered values and the prevention of problem behaviors to establish the team's goals and guide its activities. Bambara

et al. reported that SWPBIS teams employ agreed-upon processes to carry out their work. The researchers noted that sustainable school-wide behavior activities are coordinated through these teams, along with the review and evaluation of student outcome data to determine the efficacy of past efforts and need for program changes. For collaboration efforts of SWPBIS teams to be successful, the researchers suggested that there should be parallel commitments to the effective design of classroom interventions for students and to the creation of a team environment that fosters positive, ongoing collaborative interactions for all team members.

Staff Commitment

In a best case scenario, it would be desirable to attain the commitment of 100% of the adults within a school toward implementing SWPBIS. As this target may not be attainable at the outset of an implementation, researchers recommend that at least 80% of a school's adults agree to move forward with implementing school-wide interventions and supports (Sprague & Horner, 2006). It is possible that some schools may not have the recommended level of commitment to commence with the innovation, as some staff may be more reluctant to change than others. In these cases, there are several activities the school principal and leadership team can undertake to build up to the requisite level of staff support (Embry, 2004; Sprague & Horner, 2006). It was suggested that sharing data with faculty and the modeling of data-based decision-making by the SWPBIS team could increase staff buy-in (Simonsen, Sugai, et al., 2008).

Researchers Embry (2004) and Sprague and Horner (2006) observed that presenting information about the costs and benefits of implementing a coordinated approach to school-wide behavior could be effective at increasing support. The researchers found that such presentations could have a significant effect by focusing on the anticipated impacts of the universal interventions on lowering ODRs and the related discipline problems. An additional strategy they recommended to increase support is to help skeptical staff focus on the broad-based, long-term

benefits. Such a strategy could emphasize the increased teaching time made possible by reduced time allocated toward addressing disruptive students (Sprague & Horner, 2006). Sprague and Horner (2006) posited that increased time made available for actual instruction can have dual utility by making SWPBIS more attractive to staff that are sensitive to decreasing disciplinary problems and to staff that place a higher emphasis on facilitating improved student academic achievement. They suggested giving staff members the opportunity to try out some of the behavior interventions (e.g. teaching rules and reinforcing positive behavior with rewards) was also a recommended way to increase SWPBIS support.

Dedicated Time

To facilitate a successful SWPBIS implementation, it is recommended that school leadership teams meet regularly, at least twice per month (Horner et al., 2005). Researchers Horner, Sugai, Todd, and Lewis (2005) recommended that a sufficient amount of time, not less than 45 minutes, be allocated for each meeting. These researchers suggested that the dedication of consistent and adequate time for school leadership team meetings communicates that the work of the team to foster school-wide behavior management is important to the overall operation of the school. The researchers observed that the allocation of limited resources such as school personnel time is a consistent feature in schools that have successfully implemented SWPBIS (Horner et al., 2005).

Fiscal Resources

Although the success of SWPBIS is largely dependent upon using existing staff, the approach typically requires an investment of fiscal resources to underwrite implementation efforts (Horner et al., 2005). Researchers Horner et al. (2005) noted that typical related budget commitments include funding for capacity-building efforts such as developing the SWPBIS

team, releasing teachers to receive related staff development, and providing paid time for teachers to develop the school-wide behavior training curriculum. If the school does not use an adequate information system, fiscal support may be needed to invest in a new system or make adjustments to the current one (Simonsen, Sugai, et al., 2008). Simonsen, Sugai, and et al. (2008) noted that one way that funding for SWPBIS could be engendered is to share data with district and community members about the approach's successes as a way of securing funds that can be reinvested in the effort.

Information System

In subsequent sections, the importance of collecting and analyzing data so that it can be used in SWPBIS decision-making efforts will be discussed. Horner et al. (2005) found that acquiring or developing an efficient information system for this purpose is an essential variable in successfully implementing school-wide behavior support. The researchers observed that ensuring the use of such a system is a shared responsibility of the SWPBIS team and the school administration. Consistent with the findings of other researchers (Means et al., 2009), Horner et al. (2005) recommended that a computerized application be used to allow for easy data entry of and access to student data.

Use of Data

Several studies have been undertaken that emphasize the importance of the role of data in SWPBIS implementations. Research has demonstrated that most effective SWPBIS teams use data to guide their work (McIntosh et al., 2013; Simonsen, Sugai, et al., 2008). In a study involving the SWPBIS implementation efforts across 217 schools in the United States, McIntosh et al. found that an SWPBIS team's use of data has more impact on the sustainability of the implementation than any other variable. Specifically, their survey-based study involving

SWPBIS team leaders, school administrators, and other school personnel found that the use of data was positively related to training efforts and adjustments to school practices.

Researchers Simonsen, Sugai, et al. (2008) documented the integral role of data in the implementation of SWPBIS in middle school grades. Their study found that data was integral to the successful execution of the proactive approach to school-wide behavior management. Specifically, their research discussed the key role of data in the areas of assessing areas of improvement, operationalizing interventions, communicating with school staff, and measuring effectiveness.

The routine collection, analysis, and employment of data to serve as the foundational structure of making decisions are interwoven themes throughout SWPBIS (Sprague & Horner, 2006). Sprague and Horner (2006) observed that the decision-making value of data is emphasized for prioritizing student behavioral goals, selecting initial interventions and supports, monitoring the implementation fidelity of practices, and providing the basis for making needed program changes. Such a culture of collecting, synthesizing, and using data for decision-making purposes does not typically naturally occur in all schools. Training staff on how to analyze data to increase the effectiveness of their efforts can be instrumental in developing a culture of data use that increases the sustainability of SWPBIS innovations.

Sources of Behavioral Data

A systemic utilization of data as an essential component of the decision-making process is critical for SWPBIS efforts (Horner et al., 2005). The approach is reliant upon regular cycles of data collection, synthesis, and employment (Sprague & Horner, 2006). Horner et al. (2005) observed how essential it is for SWPBIS teams to be able to access timely and accurate student behavior information to effectively identify and address problem behavior patterns. The

researchers identified common behavioral data sources that SWPBIS decision-makers would need to address students with identified behavior problems.

Common behavioral data may be useful for SWPBIS team's development and review of student behavior records and the team's formulation of effective prevention strategies to address problem behavior. Such common behavioral data that, at a minimum, should be collected, analyzed, and acted upon include (a) summary and disaggregated ODR data, (b) suspensions, (c) attendance, and (d) tardiness information (Horner et al., 2009). Additional data that can be used to inform the SWPBIS decision-making process include student achievement and survey data (Lewis et al., 2010).

Data Collection

A logical precursor to analyzing data is ensuring that data are collected so that they are available for analysis. Systemically collecting data so that they are accessible to school personnel can increase commitment to the innovation in both the short and long runs (Coffey & Horner, 2012). Coffey and Horner (2012) argued that buy-in toward school-wide behavior support increases with the availability and sharing of data with school staff, even when the results may not be celebratory. The act of collecting data can foster a sense of urgency and provide momentum for the change effort (Earl & Katz, 2002).

As introduced earlier, the use of a sufficient information system that facilitates data collection is essential to SWPBIS efforts. It is important that information systems used by SWPBIS teams and other personnel to support school-wide behavior support also facilitate the collection of relevant behavioral incident data included in an ODR (McKevitt & Braaksma, 2004). McKevitt and Braaksma (2004) found that relevant data includes the date and time of each behavioral incident, each participant's name and grade level, the location of the incident,

name of the teacher, the name of the individual making the referral, and the consequence resulting from the behavior displayed. The researchers found that data should be entered and maintained in a database to make them more accessible to SWPBIS team members.

There are several data online data options available to districts and schools to collect and report student behavior data. One such system is the Schoolwide Information System© (SWIS), which is used to track ODR (B. Walker, Cheney, Stage, Blum, & Horner, 2005). This stand-alone tool provides web-based data management, and it permits schools to enter and monitor ODR for individual students and school-wide. The web-based software includes functionality for creating predefined reports and charts that summarize disciplinary activity. The SWIS provides real-time access to discipline information (Irvin et al., 2006), but its utility can be limited if the software is not integrated with a school's student information system (SIS) (www.swis.org).

A SIS that facilitates the collection and reporting of student discipline and other data in real-time can be a practical solution to support the use of data by SWPBIS teams. Examples of such SIS that are used for millions of students across the United States are Pearson's PowerSchool and Edupoint (Dries, 2014). Dries (2014) found that these SIS provide districts and schools one-stop online management of student discipline information and other student data such as student attendance, demographics, assessment results, participation in free or reduced meals programs, grade books, and medical records. Pearson's PowerSchool was founded in 1997, and its customer base grew to over 2,000 schools within four years. The web-based reporting features in this SIS include student performance, grade, homework, and attendance information for administrators, teachers, students, and parents (Dries, 2014). Edupoint is a popular SIS company as it is in 5,000 schools and in several of the nation's largest school

districts (Edupoint, 2015). The company has developed a record of providing integrated data entry and reporting solutions to schools, including providing web-based SIS, discipline and Special Education reporting services to schools since 2002 (Dries, 2014). The most recent SIS product, Synergy, launched in 2005 (Edupoint, 2005).

Another SIS company that is fast gaining popularity since 2009 is the Illuminate Student Information System (ISIS) provided by Illuminate Education (Simpson, 2011). ISIS complete or partial module solutions are in use in over 500 school districts across the U.S., including various districts that integrate ISIS's special education (ISI) and / or data management and assessment (DNA) modules with the district's existing SIS. Illuminate Education's DNA product can be integrated with other student data systems to facilitate storage and collection of longitudinal data useful for guiding school improvement efforts (Simpson, 2011). The participating school in the current study employed an integrated student data system consisting of the Synergy SIS and Illuminate Education's DNA.

Data Analysis

As Horner et al. (2005) observed, data used to implement and sustain school-wide behavior support does not need to be of rigorous research quality; practical data, even that which is summarily collected, should be collected if its analysis can be used to further SWPBIS efforts. The analysis of data could yield valuable insight into what additional behavior instruction may be needed as identified in the collected data (McKevitt & Braaksma, 2004). Researchers McKevitt and Braaksma (2004) argued that ODR data should be reviewed regularly at SWPBIS team meetings to assess if modifications are needed to the school-wide efforts, thereby increasing the data's utility. They suggested that ODR data can be used to efficiently identify

behavior patterns and trends, locations where problem behaviors typically occur, and the usual time of day when problem behaviors are displayed.

McKevitt and Braaksma (2004) explained how a SWPBIS team's regular review of ODR enhances the data's value as data becomes a formative analysis tool. Case in point, a rise in ODR generated from a particular area in a school (e.g. hallway) may lead the team to investigate this location of the school. The SWPBIS team may want to collect additional data to determine why problem behavior is frequently occurring in this location and implement a plan of action to address the behaviors (McKevitt & Braaksma, 2004). Similarly, a frequent examination of ODR data may reveal that a high number of referrals are generated from one teacher. Analyzing such data could help inform training efforts focused on effective classroom management practices (Stormont, Covington, & Lewis, 2006).

The review of behavioral data at the end of the year can serve as a summative evaluation tool. The review of ODR data from the current year and its comparison to previous years provides one avenue of determining the overall impact of the SWPBIS efforts (McKevitt & Braaksma, 2004). According to McKevitt and Braaksma (2004), a comparison of ODR data over multiple years provides insight as to how behavioral support is affecting the display of problem behaviors school-wide. For example, the researchers hypothesized that an SWPBIS team might deduce that students who received between three and five ODR within a school year may be in need of additional behavior instruction and support beyond the universal level. Repeated problem behaviors displayed by students may be an indication that students need targeted smaller group instruction in the development of skills such as anger management, social, problem-solving, and friendship-making (McKevitt & Braaksma, 2004).

Data Use Barriers and Training

According to Earl and Katz (2002), data about schools seems to garner the most public attention when it comes to education; yet, it seems that most educators have not developed the capacity to interpret and use data. The researchers succinctly summarized the dilemma regarding school personnel's effective use of data in school. They observed educators' interpretation and application of data are often inadequate and sometimes very wrong, leaving school leaders in a weakened position when it comes to challenging others' debatable interpretation and uses of data. For school leaders to actively interpret and use data effectively, they must develop literacy about data (Earl & Katz, 2002). Such literacy includes (a) the ability to understand that different data serve different purposes, (b) discern the quality of data, (c) recognize basic statistical measurements, (d) interpret data, and (e) report data out clearly.

The need for data literacy in schools was more recently addressed by researchers Means, Padilla, DeBarger, and Bakia (2009), who found that there are still barriers that inhibit effective data use, in spite of the increasing amounts of student data in which school personnel can access. In their research, they found that most teachers did not feel capable of generating pertinent data reports. The researchers argued that employing user-friendly information systems is a good first step; training school personnel on how to retrieve data from these systems and subsequently analyze them are necessary additional steps to increase the effective use of data.

Means et al. (2009) found that a substantial number of teachers have difficulty accessing information they deem helpful, locating desired information, and navigating electronic data systems with ease. This finding is consistent with previous research (Cho & Wayman, 2009; Wayman & Cho, 2008). Providing school personnel training on accessing and using data in electronic information systems is one approach to promoting data-informed decision-making

efforts in schools (Means et al.). Means et al. suggested that providing data training to school personnel can be effective at addressing data misinterpretation; improving interpretations of results across years, schools, and different student groups; and facilitating reflection on the effectiveness of processes that may have contributed to the results.

There are several lessons learned regarding school personnel training around data use from a study that focused on the implementation of positive behavioral support discipline policies in urban schools (Barnhart, Franklin, & Alleman, 2008). Barnhart, Franklin, and Allen (2008) observed that training could bolster the data use strategies found to be particularly effective for supporting SWPBIS efforts, including tracking ODR, generating regular reports, providing timely discipline data to staff, and monitoring the effectiveness of interventions. The researchers observed that training staff on data use could be jumpstarted by employing data to confirm or disconfirm engrained beliefs regarding the frequency and necessity the use of student suspensions. In their study, such an exercise was typically followed by realization from school staff that their perception was not aligned to reality. The researchers found that providing school-specific data of the number of suspensions disaggregated by reason, gender, ethnicity, and grade level facilitated staff's realization of the dependency upon which suspension was used (Barnhart et al., 2008).

Barnhart et al. (2008) also found that after using data to identify the magnitude of a behavioral issue, it may be necessary to train school personnel on how to make meaningful inquiry into the data. The researchers noted that providing staff data without an accompanying guide on engage in active reflection may be insufficient at increasing their proficiency as data users. Barnhart et al. suggested that during data training, a guide consisting of basic leading questions that could be helpful in stimulating further inquiry into the data and pinpointing likely

causes should be provided to school personnel. Consequently, such training may serve as a starting point for improving the effectiveness of the SWPBIS decision-making process and review (Barnhart et al., 2008).

While training SWPBIS teams on how to use data could be beneficial to general data use efforts, Upreti (2009) found that biases toward and familiarity with students may impede effective use of data for some participants. Because of previously held biases, some participants may tend to discount articulate and persuasive information that do not confirm or protect their preexisting opinions and outlooks. This way of cognitively processing information is known as biased processing, and it presents a challenge to effective use of data (Upreti, 2009). Upreti (2009) found that constant exposure to a person hinders an observer's ability to accurately process objective data about that person. The researcher found that teachers who have familiarity with certain students may develop biases that give rise to certain types of disciplinary actions. For example, negative bias towards students may develop quickly for those who were previously disciplined for perceived immoral or violent behaviors. Understanding how this phenomenon could play out, Upreti (2009) cautioned that trainers and user of data should carefully consider their own biases while engaged in this work.

Imagine a data sharing meeting, in which data on students who were in the office last quarter for such infractions are being shared with the general staff. Though these students may now be improving academically and socially, teachers who are not fond of these students may not register that fact, and if asked, respond that the same kids are still getting into trouble and being sent to the office, all evidence to the contrary. (Upreti, 2009, p. 67)

Summary

The development of PBIS and the school-wide application of the framework (SWPBIS) has been informed by public education experiences in the U. S. since the early 1900s. Building upon the lessons learned from traditional classroom management practices and zero-tolerance policies, SWPBIS has become a wide-ranging and multifaceted approach for addressing problem student behaviors for all students in all school settings. This approach is heavily reliant upon the use of research-based classroom practices, embedded school support systems, and use of data to achieve student outcomes. The collection, analysis, and use of data are essential SWPBIS components, and it is important that barriers to these activities be identified and remedied to facilitate full implementation of the approach. If training SWPBIS teams on how to analyze and use data is sufficient to increase their success at executing the school-wide behavior support plan, then it is possible that this study will strengthen SWPBIS implementation efforts.

CHAPTER 3: METHODOLOGY

This research used a mixed methods, embedded design (Creswell & Clark, 2007) that consisted of a quantitative quasi-experimental, one-group pretest-posttest design supplemented by qualitative data to answer the research questions that serve as the parameters of the study. Creswell and Clark (2007) observed that this design may be appropriate and useful for using qualitative data to provide a supportive and secondary role to largely quantitative research studies. A specific advantage of employing an embedded design includes enhanced efficiency in data collection, as extensive qualitative data are not required in a secondary role. In a similar vein, because collection of secondary data does not need to be extensive, this approach can increase the manageability of a research project (Creswell & Clark, 2007).

The quantitative, quasi-experimental pretest-posttest design was useful in testing descriptive causal hypothesis and for determining if the effects of treatment effected a change between the pretest and posttest. The design involved a pretest that was applied prior to delivering the intervention. The experimental treatment followed the administration of the pretest, which was subsequently followed by a posttest using the same measures as in the pretest.

Participants

This study focused on SWPBIS implementation efforts at a large elementary school in a Northern California urban school district. The elementary school's enrollment in the 2014-2015 school year was approximately 1,000 students. The participating school served students from grades kindergarten through eight. Participants from the school included all members of the SWPBIS leadership team, including school personnel assigned to primary grade spans (kindergarten through grade three), intermediate grade spans (grades four through six), and middle school grade spans (grades seven and eight). There were a total of 11 participants on the

leadership team, including the school's principal, assistant principal, counselor, two special education program teachers, and six general education program teachers. All of the participants were female except for one male participant. Participants self-identified racial categories were Black or African American (2), Filipino (1), White (5), and two or more races (1). Two of the participants declined to self-identify with a racial category.

The large school selected to participate in this study served significant numbers of students from low income families as represented by receipt of free or reduced price meals. Approximately 73% of the students were from low income households. The school served a substantial number of students with special learning needs. Students who were English Learners comprised approximately 25% of the school's total student population. The student population was ethnically diverse as well. Students of Hispanic origin accounted for approximately 43% of enrollment. The remaining 57% of the student population consisted of Asian (30%), African American (9%), White (6%), and several other ethnicities (12%).

Sampling Procedures

In this study, the purposive sample provided the means to investigate the impact of the SWPBIS team's use of data on implementation efforts at a large elementary school in a Northern California school district. The use of purposive sampling for data collection can be appropriate for special situations, including sampling to obtain specific criterion-based representation (Lunenburg & Irby, 2008). The population in this study consisted of all of the elementary schools in a Northern California school district. The criteria used to select the participating elementary school was inclusive of large student enrollment size (at least one thousand students), years implementing SWPBIS (at least three years), and frequency of SWPBIS team meetings (at least monthly). The school selected was the only elementary school in the school district to meet

the criteria. Specifically, the selected elementary school had an approximate enrollment of one thousand K-8 students in the 2014-15 school year. The 2014-15 school year represented the fourth year of SWPBIS implementation at this school. Additionally, the SWPBIS leadership team had been meeting as a component of the school's implementation process. The exploration of the purposive sample allowed for the examination of school adult behavior regarding data entry and use protocols. The sampling method also facilitated an examination on the impact of data-centered training on SWPBIS team meetings and the explicit use of data to make program decisions.

The researcher introduced the study by attending a meeting in April 2016 with all the members of the SWPBIS leadership team – personnel responsible for the implementation of school-wide behavior management at the school. A follow-up participant letter was sent via email to each member of the team to request their participation in the study. In the letter, an explanation of the research study's purpose was provided to potential participants. Additionally, the letter explained the need for their participation in the survey and that they were selected as potential participants in the study because of their role on the SWPBIS leadership team. The letter also indicated that their individual results would remain confidential, and it explained the risks involved in participating in the study. Finally, the letter clarified that participation in the survey was voluntary and that every SWPBIS team member who volunteered to participate in the study would receive \$5 McDonald's gift cards. Upon review of the participant letters returned by the SWPBIS team members, the research confirmed the individual team members who agreed to participate in the study.

The participating school provided the following information for its SWPBIS leadership team members and teaching staff: (a) first names, (b) last names, and (c) email addresses. All 11

members of the school's SWPBIS team agreed to participate in this study, including receiving training provided by the researcher on accessing, using, and sharing PBIS data pertaining to their school. The school used the district's data system that consisted of two integrated computer-based systems: Synergy and Illuminate. Synergy contained student discipline modules for entering and maintaining student behavioral data. Student information in the student discipline modules included the following attributes: role, gender, race/ethnicity, and grade level. Illuminate contained user-friendly reports that enabled participants with the ability to retrieve and generate actionable student information reports.

Instrumentation

The instrument used by the researcher included an online survey, entitled the PBIS Data Use Survey, that was emailed to each member on the site's SWPBIS team. Survey Monkey, an online professional survey software program, was used to collect data from respondents. The survey instrument was based on the Benchmarks of Quality (BoQ). The BoQ is a 53-item instrument created by Childs, Kincaid, and George (2011) that is endorsed by the PBIS Center as an approved tool to evaluate SWPBIS. There are 10 subscales on the BoQ, including the Data Entry and Analysis Plan Established (DEAPE), which consisted of four questions.

The researcher's PBIS Data Use Survey (see Appendices A and B) was based on a modified version of the four-question DEAPE section of the BoQ, providing more detailed response options than those included on the unmodified BoQ DEAPE. Similar to the BoQ DEAPE, the purpose of the survey was to elicit information on data collection and analysis in support of SWPBIS implementation efforts. The survey required no more than 10 minutes to complete and consisted of four Likert-type items designed to address the research questions presented in the current study.

Specifically, the first substantive item (question two) on the survey solicited information regarding various types of student data to which respondents perceived they had access. Descriptive statistics resulting from this item served as the basis for addressing research question one, regarding SWPBIS team members' access to student data. Taken together, descriptive statistics resulting from items three, four, and six of survey provided quantitative evidence on the usefulness and frequency of analysis and sharing of accessible data, all of which were concerns embedded in research question two. Additionally, survey questions five and seven were open-ended items that provided qualitative information regarding the type of data the SWPBIS typically analyzed and shared, including the underlying rationales for the data's selection for analysis and dissemination.

The paired-samples *t*-test was used to compare differences in items two, three, four, and six between the pretest and posttest administrations of the survey instrument to address research question three. An open-ended item was included as the seventh question of the survey, which was designed to elicit qualitative information on the nature of data the SWPBIS usually shares with other school personnel along with and the team's reasoning for sharing the data. SWPBIS team members responded to each item on a seven-point Likert scale.

Validity and Reliability

Though the survey instrument used slightly modified versions of the BoQ DEAPE, research on the BoQ indicates that such modifications do not invalidate the results generated (Childs, George, & Kincaid, 2011). Childs, George, and Kincaid (2011) found the BoQ to produce stable results even when administered using methods that varied from those used in the validation study. The study consisted of a sample of 398 administrations of the BoQ. Approximately 57% of the schools used the validated method for the tool; 43% used a variant

method. The analysis performed was an independent samples *t*-test comparing BoQ factor component results between the two methods. Then, a Cochran-Mantel-Haenszel Statistics test was employed to evaluate the association between each BoQ item and the methods of administration. The significant level $\alpha=0.05$ was adjusted to $\alpha=0.05/53 \approx 0.001$ since the BoQ tests 53 question items simultaneously. The *t*-test results showed that there was no significant difference on any factors of the BoQ between the methods of administration.

Cohen, Kincaid, and Childs (2007) found the BoQ to be a valid and reliable instrument for measuring the implementation of SWPBIS. Their study included the use of descriptive data to determine internal consistency, test-retest reliability, interrater reliability, and concurrent validity. The study's findings indicated that the BoQ is an efficient, reliable, and valid tool useful for measuring SWPBIS implementation fidelity at the universal level within individual schools. Validation and reliability of the survey instrument were derived from the BoQ. Survey validity and reliability were also achieved by piloting the survey with school personnel at an elementary school with similar demographics within the same school district as the participating school.

Data Collection

The analysis in this research study had not taken place in large elementary schools in the Northern California school district prior to this study. I sought and received approval from the district's Research Review Committee to engage SWPBIS leadership teams of its large elementary schools. I signed a research application agreement to preserve both confidentiality and anonymity of schools and individuals and returned it to the committee prior to beginning the study. Proper university protocols for the Institutional Review Board (IRB) were also followed, including the National Institute of Health (NIH) research certification of practice.

Pretest Survey

During the first week of August 2016, the researcher administered the survey, using Survey Monkey's online portal, to every team member who agreed to participate in the study. The link to the survey was disseminated via email. SWPBIS team members were invited to complete the survey during their pre-service planning time before the start of the school year. An explanation on how to complete the survey was included in the survey (see Appendix A). The team members were given five days to complete the online survey from the date the survey was administered. An email was sent on the second and fourth day after the survey was distributed to remind the participants to complete the survey.

Intervention

Training was provided by the researcher, who was an educational researcher employed within the same district, to the school's SWPBIS leadership team in August 2016. The researcher was familiar with the school's administrative team and the district's data system capabilities. The primary focus of the training was to demonstrate how the reporting capabilities could be employed to increase school personnel's ability to access, analyze, and share out student behavior and achievement data within Illuminate, the reporting component of the district's data system.

For the duration of the 90-minute professional development, participants were placed in three nominal table-groups that consisted of four, four, and three members in each. The researcher shared with the participants that the goal was to improve the accessibility and usability of school-wide behavior, attendance, and academic achievement data. The participants were informed that the professional development and related materials were designed to facilitate achievement of data accessibility and usability goals.

Current research on the importance of using data to implement school improvement efforts, including school-wide behavior modification programs, was shared with participants at the beginning of the training. An agenda for the professional development is located in Appendix C. Several benefits of using data to implement SWPBIS were highlighted, including identifying student behavior and academic skill needs (McKevitt & Braaksma, 2004) so that these needs could be addressed with appropriate interventions at the earliest possible stage. Such an assessment of needs could include determining areas of programmatic strength and weaknesses, providing useful information on how to direct limited staff and fiscal resources. The importance of using the training to develop data literacy (Means et al., 2009), especially with respect to office discipline referral data (McKevitt & Braaksma, 2004), was reviewed. Participants learned that they would be able to access, interpret, and analyze nightly-updated data reports. Training materials consisted of six reports created in Illuminate that contained behavior, attendance, and academic achievement data, along with applicable data analysis templates. The agenda from the training is displayed in Figure 1, and a brief description of each of these reports is included in Figure 2.

Topic	Estimated Time
SWPBIS Training Agenda	3-5 minutes
Introduction of Trainer	3-5 minutes
What Research Says About Data Use	3-5 minutes
Expected Training Outcomes	3-5 minutes
Nominal Grouping of Participants	1-2 minutes
Introduction of SWPBIS Data Reports in Illuminate – Behavior, Attendance, and Achievement Reports	5-8 minutes
Behavior Data Reports Description and Exercise	30-40 minutes
Attendance Data Reports Description and Exercise	20-30 minutes
Achievement Data Reports	10-20 minutes

Figure 1. SWPBIS reports training agenda.

Report Title	Brief Description
Behavior - Discipline Referrals by Consequence	What are the typical disciplinary consequences that result from the issuance of office discipline referrals in the school? This report responds to this question by disaggregating referrals by resulting disciplinary consequences.
Behavior - Suspensions by Behavior Violation	Why are suspended from the regular instructional process and environment in the school? This report provides answers to this question by detailing the number of incidents of student suspension per each stated behavior violation.
Behavior - Violations by Grade Level	Where in the instructional program are behavior violations most frequently observed by school staff? The report reveals the answer to this question by displaying the disaggregated number of incidents of each behavior violation by grade level.
Attendance - Percent Present	At which grade levels are students least successful in attaining regular attendance in school? The report's list of grade levels in the school accompanied by the associated student attendance rate addresses this question.
Attendance - Percent Tardy	At which grade levels do students have the most difficulty in getting to class on time? The list of the school's grade levels served and their rate of student tardiness responds to this question's concerns.
Achievement - Average Percentile Rank	At which grade level should limited academic interventions be focused? The report's list of average National Percentile Ranks in Reading and math, disaggregated by grade level, helps to identify where limited academic intervention resources should be allocated.

Figure 2. Description of Illuminate SWPBIS reports.

Participants learned how to access the customized reports summarized in Figure 2 in Illuminate. The process for logging participants into the system and accessing the reports was brief as participants had previously created login credentials as part of their regular school access. Participants also received instruction on how to correctly identify specific elements within the data reports. They were able to practice reading and discussing the layout of reports in the small groups with their colleagues. The agenda for the training is provided in Figure 1.

Particular emphasis of the professional development intervention provided to participants was on office discipline referrals, tardiness, suspension incidents, counseling incidents, student attendance, and grades (student achievement). The researcher provided each participant copies of behavior, attendance, and achievement reports generated from the district's data system. This was followed by a demonstration of how to access the online version of these reports and subsequent time for participants to practice accessing and retrieving data from the system. The researcher roved between the three groups to monitor if participants were experiencing difficulty logging into the system and locating the reports. None of the participants were unable to access the data reports.

The researcher developed and embedded guiding questions into the presentation that were used to increase the participants' proficiency at analyzing student data. These questions were packaged as data exercises in which each group participated as they reviewed and discussed behavior and attendance data. For example, behavior data guiding questions focused on the (a) identification of the number of various types of behavior violations, (b) behavior consequences, (c) infractions at various grade levels, (d) interventions to support student behavior, and (e) identification of a future date to monitor the effectiveness of the interventions selected. See

Figure 3 for the complete list of guiding questions for student behavior and student attendance reports.

Behavior Data Guiding Questions	Attendance Data Guiding Questions
Of all the office discipline referrals issued by school staff, how many consisted of a suspension from class, in-school, or off-campus?	At which grade levels were the highest / lowest attendance rates based on students' percent present?
For which behavior violation(s) did school staff issue the most suspensions?	At which grade levels were the highest / lowest attendance rates based on students' percent tardy?
At which grade levels do the above violations most frequently occur?	What interventions and supports will be used to increase students' percent present and decrease student tardiness?
What interventions and supports will be used to decrease these targeted behavior violations and increase positive student behavior?	When will students' data be reviewed to determine how the interventions are impacting students' attendance?
When will students' data be reviewed to determine how the interventions are impacting students' behavior?	

Figure 3. Behavior and attendance data reports guiding questions.

Although the intervention did not provide explicit instruction on how to share data with school personnel, the researcher modeled this activity for the participants when he introduced the various reports, provided a brief description of the purpose of the reports, and explained the sections, labels, and numbers contained in the reports. Additionally, each group of participants engaged in the sharing of report data after they worked through each of the guiding questions. The groups first used the guiding questions in the data exercises to analyze student data. They then used the guiding questions as prompts to narrate the discussion of the data and arrive at their conclusions.

Posttest Survey

The researcher administered the posttest survey, using Survey Monkey's online portal, to each participating team member during the first week of September 2016, five weeks after the administration of the pretest survey and approximately three weeks after the training intervention. The link to the survey was disseminated via email. SWPBIS team members were invited to complete the survey during their prep period. Similar to the administration of the pretest, team members were provided instructions on how to complete the survey via email. Additionally, they were allotted five days to complete the survey. The same procedure as the pretest was used, and again, an email was sent to them on the second and fourth days after the survey was sent to remind them to complete the survey. The posttest survey consisted of the same items used in the pretest.

Follow Up

Approximately six weeks after the posttest survey was completed, the researcher followed up with participants to determine if they were using the data reports from the professional development training as part of their SWPBIS implementation. Participants were contacted via an initial email and a reminder email approximately one week after the initial follow-up email was sent. In the emails, the researcher solicited information on the degree to which data was being used as a result of the data-focused intervention provided as part of this study.

Data Analysis

Quantitative Analysis Procedures

This quasi-experimental study made use of a pretest and posttest administration of the PBIS Data Use Survey to assess data use by SWPBIS team members. The survey was designed

to elicit team members' perceptions of their data analysis and use activities. There were four multiple-choice rating questions on the survey related to the district's data system regarding the accessibility and usefulness of student data. In addition to querying participants directly about the usefulness of student data, perceptions about data usefulness were gathered based on the frequency or regularity in which participants analyzed and / or shared data as aligned with the work of McKevitt and Braaksma (2004). Demographic information was solicited from the respondents to facilitate disaggregation of results for response items. Statistics describing the number of survey participants, the mean, and the standard deviation for each item were provided. The researcher also provided the median descriptive statistic. While the mean and standard deviation were the primary descriptive statistics employed, the median enabled the reporting of the maximum rating selected by at least half of the participants on the survey instruments' multiple choice items.

Team members' use of data was reported using seven-point Likert scales that most closely represented participants' views. Paired-sample t tests were performed to determine whether there were significant increases between respondents' pretest and posttest ratings concerning data accessibility, data usefulness, and the frequency with which data were analyzed and shared. The researcher selected the one-tailed directional t test statistic to compare observations as it was determined that providing respondents an opportunity to increase their knowledge and skill in retrieving and using data should not result in them experiencing a perceptive decrease in data-related skills. The two data collection points were categorized as follows: pretest and posttest. Statistical information derived from the paired-samples t test were the mean, standard deviation, observations, degrees of freedom (df), and t statistic. The alpha level was set at 0.05.

Qualitative Analysis Procedures

The researcher in the present study selected additional procedures to incorporate qualitative analysis into this primarily quantitative research. Each of the surveys employed in this study included two open-ended questions that facilitated a detailed understanding of how the SWPBIS team used student data. The first of these questions was: Please provide an example of data that you have recently analyzed. Participants were asked to explain why the data provided as an example was analyzed. This question was designed to provide the researcher an understanding of the type of data study participants usually selected for review. Participants were given an opportunity to provide an example of data the SWPBIS typically analyzed along with an explanation of why specific data points were selected. Responses received from participants generally consisted of short paragraphs that highlighted specific data points and their perceived value to the SWPBIS implementation effort.

The second open-ended question was: Please provide an example of data you have shared with other school staff. Participants were asked to explain why the data provided as an example was shared. This question was concerned with data that was shared by the SWPBIS team with other school personnel. The question queried SWPBIS team members about specific data that was shared with their colleagues. The respondents were encouraged to provide the rationale for sharing data.

At the conclusion of each of the surveys, the researcher employed qualitative analysis procedures consistent with Creswell (2013). The analysis procedures were designed to answer questions about how data were used by school personnel within an elementary school as they were leading SWPBIS implementation efforts. The analysis was concerned with real-life implications of a contemporary phenomenon (Yin, 2013).

Creswell (2013) and Yin (2013), recommended that researchers provide context when discussing qualitative data. The time, space, and SWPBIS team involved in the use of data to implement school-wide behavior management frame the boundaries of applied qualitative procedures. This study was conducted over the course of two months during the first semester of the 2016 school year. Research activities were limited to the school building and premises of one of the large elementary schools in a Northern California public school district. All 11 members of the school's SWPBIS team participated in this study.

Answers to open-ended questions on the PBIS Data Use Survey were word-processed by the researcher prior to the coding of responses. Responses were coded by grouping them into categories of specific data analyzed and shared, respectively. The researcher also developed categories for reasons provided by staff for the use and sharing of specific data points. The researcher, an educational investigator with approximately twenty years of professional education research and public policy evaluation experience, performed the development of coding categories and the subsequent assignment of responses.

Each of open-ended responses was reviewed by the researcher to develop a list of potential categories at the beginning of the coding process (Creswell, 2013). This review facilitated the development of potential response categories. After the researcher created responses categories, each of the responses were again reviewed and assigned to one of the categories. Subsequently, participant responses were assigned to one or more relevant codes.

The researcher used the coded responses to identify patterns and themes regarding the SWPBIS teams' use and sharing of data. Common themes emerged by the researcher's identification of related categories and coded responses. These themes were analyzed, and they were used to provide additional information and context from the primary survey questions.

Summary

This chapter discussed the mixed methods used in the current research study. This discussion primarily focused on a mixed methods design, comprised of a quasi-experimental one-group pretest-post design and a quantitative embedded design (Creswell & Clark, 2007) that was supplemented by qualitative data. The participants, sampling procedures, instrumentation, data collection, and data analysis procedures that were the focus of this research study were discussed in detail.

CHAPTER 4: RESULTS

The purpose of this applied research dissertation was to resolve the variability of data collection and analysis for SWPBIS implementation as the successfulness of this approach is dependent upon on a guiding team of educators who use data to make program decisions. This dissertation utilized descriptive statistics, as well as quantitative and qualitative procedures, for data collected via survey by the researcher.

Data was collected from 11 participants at pretest and at posttest of the PBIS Data User Survey instrument (see Appendices A and B). Descriptive measures were reported for responses related to social and emotional data, including aggregated office discipline referral, counseling incident, and suspension incident data. Additional descriptive measures were reported for attendance-related response data, including aggregated attendance and tardy data. Finally, responses related to achievement data were also reported. The participants were not matched between survey administrations to maintain anonymity.

Quantitative Data Analysis

Research Question One

This study aimed to answer the following question: To what extent do SWPBIS teams have access to behavior data that informs their decisions on how to facilitate students' development of behavioral skills that will help them be successful in school? To address research question one, detailed descriptive statistics from the results of survey question two from the pretest and posttest were provided. The survey's second question, a multiple part ranking item, requested respondents to indicate the accessibility of behavior, attendance, and achievement student data in their district's data system. Respondents' possible answer choices (including their numerical point values) were as follows: not accessible (1), very difficult to

access (2), difficult to access (3), moderately difficult to access (4), slightly difficult to access (5), easy to access (6), and very easy to access (7). The possible distribution of responses ranged from one – “not accessible” – to seven – “very easy to access.” The mean ratings and standard deviations from the pretest and posttest for data accessibility are displayed below in Table 1. Each of the related data items are discussed in more detail in this section.

Table 1

Pretest and Posttest Results for Student Behavior, Student Attendance, and Student Achievement

Data Accessibility – Mean and Standard Deviation

Variable	Pretest		Posttest	
	M	SD	M	SD
Overall Behavior Data Accessibility	2.61	1.30	5.27	1.69
Office Discipline Referral Data Accessibility	2.91	1.45	5.45	1.81
Counseling Incident Data Accessibility	2.36	1.57	4.91	2.12
Suspension Incident Data Accessibility	2.55	1.63	5.45	1.81
Overall Attendance Data Accessibility	3.96	2.24	6.32	0.51
Student Attendance Data Accessibility	4.09	2.39	6.55	0.52
Student Tardiness Data Accessibility	3.82	2.18	6.09	0.70
Student Grades and Achievement Data Accessibility	4.27	2.15	6.45	0.52

Pretest behavior data accessibility results. In the second question of the pretest survey, participants were asked to indicate the level of access they had to their current students’ data in the district’s data system. As illustrated in Figure 4, participants assessed the accessibility of behavior-related data in the district’s data system with a mean rating of 2.6. The maximum rating available was a 7.0. The mean rating for data related to office discipline referrals was 2.9.

Accessibility of counseling incident data received a mean rating of 2.4. Additionally, the mean rating assigned regarding the accessibility of suspension incident data was 2.5. Tabular depictions of the mean and standard deviation of pretest behavior data accessibility results are included in Table 2.

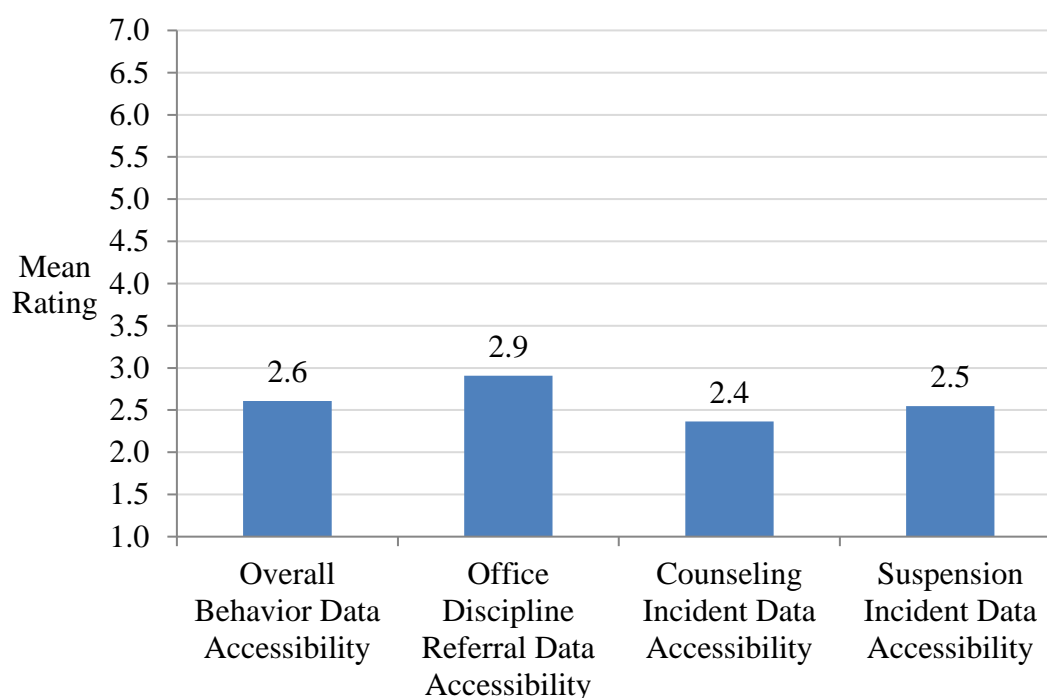


Figure 4. Mean participant rating for the accessibility of behavior-related data items on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

Table 2

Pretest Behavior Data Accessibility Results – Mean and Standard Deviation

Variable	M	SD
Overall Behavior Data Accessibility	2.61	1.30
Office Discipline Referral Data Accessibility	2.91	1.45
Counseling Incident Data Accessibility	2.36	1.57
Suspension Incident Data Accessibility	2.55	1.63

The median value of the distribution of responses from the pretest regarding data accessibility indicates the point at which at least half of the participants rated the maximum accessibility of data in the district's system (see Figure 5). The reported median rating for accessibility to behavior-related data ranged from 2.0 to 3.0. Specifically, the median ratings regarding data accessibility were (a) 2.0 for counseling and suspension incidents and (b) 3.0 for office discipline referrals.

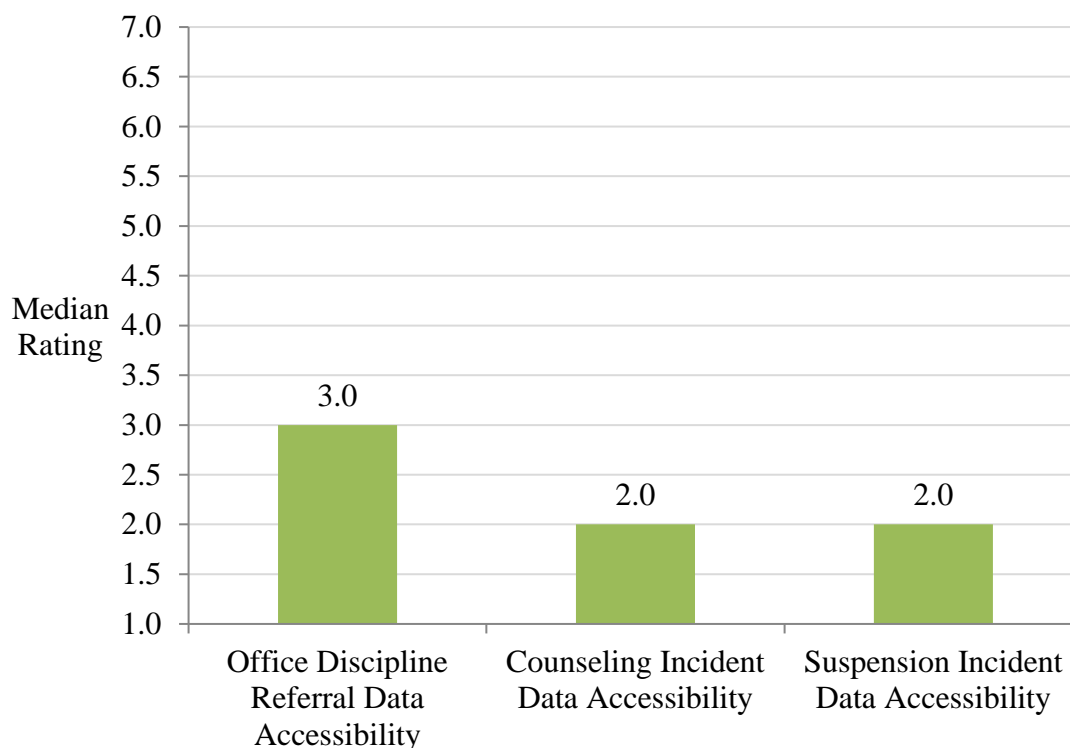


Figure 5. Median of participant ratings for the accessibility of behavior-related data items on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

Pretest attendance and achievement data accessibility results. Based on the participants' pretest appraisal of attendance-related data in the district data system, an overall mean accessibility rating of 4.0 resulted. This information is depicted in Figure 6. Accessibility of student attendance data was rated 4.1 on average. As shown in Figure 7, participants gave a mean rating of 3.8 regarding access to student tardiness information in the district's data system. Additionally, the participants' mean rating was 4.3 when queried about the accessibility of student grades and achievement data in the district's data system. Tabular depictions of the mean and standard deviation of pretest attendance data accessibility, student grades, and achievement data results are included in Tables 3 and 4, respectively.

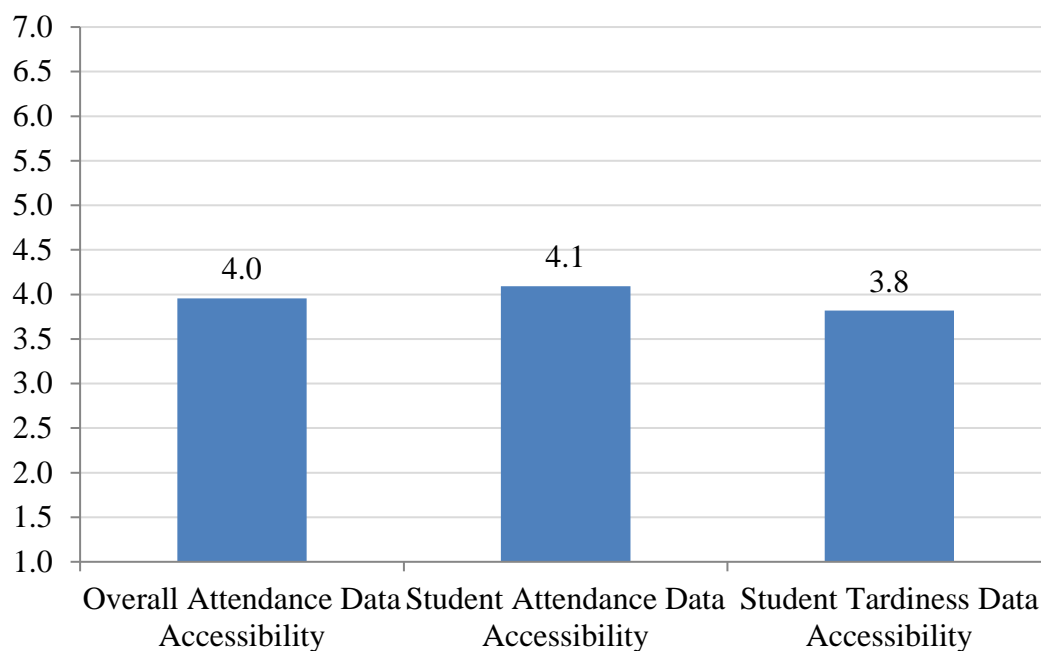


Figure 6. Mean participant rating for the accessibility of attendance-related data items on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

Table 3

Pretest Attendance Data Accessibility Results – Mean and Standard Deviation

Variable	M	SD
Overall Attendance Data Accessibility	3.96	2.24
Student Attendance Data Accessibility	4.09	2.39
Student Tardiness Data Accessibility	3.82	2.18

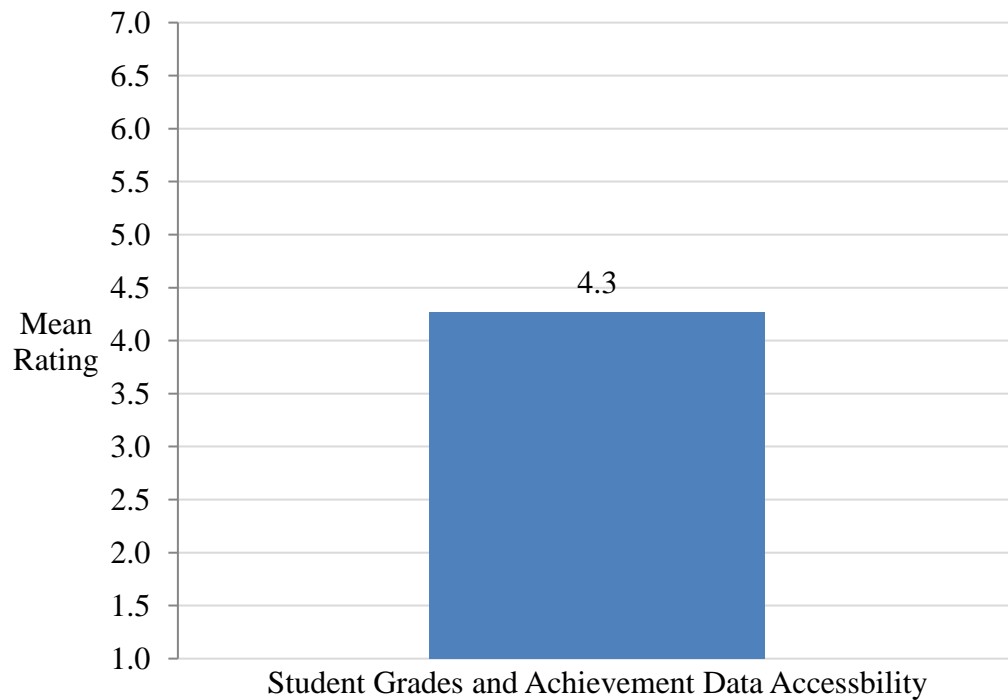


Figure 7. Mean participant rating for the accessibility of the student grades and achievement-related data item on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

Table 4

Pretest Student Grades and Achievement Data Accessibility Results – Mean and Standard Deviation

Variable	M	SD
Student Grades and Achievement Data Accessibility	4.27	2.15

The reported pretest median rating for accessibility to both attendance-related data items was 4.0 as indicated in Figure 8. Additionally, the participants' median rating regarding accessibility to student grades and achievement data in the district's data system was 5.0 (Figure 9).

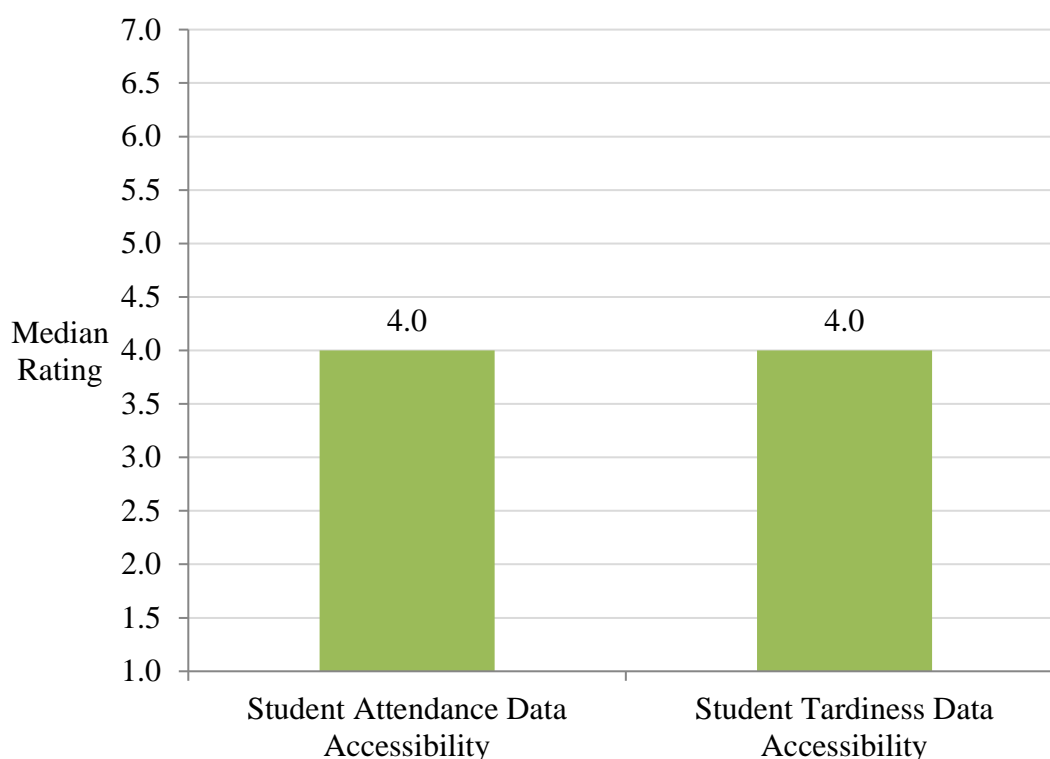


Figure 8. Median of participant ratings for the accessibility of student attendance and student tardiness-related data items on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

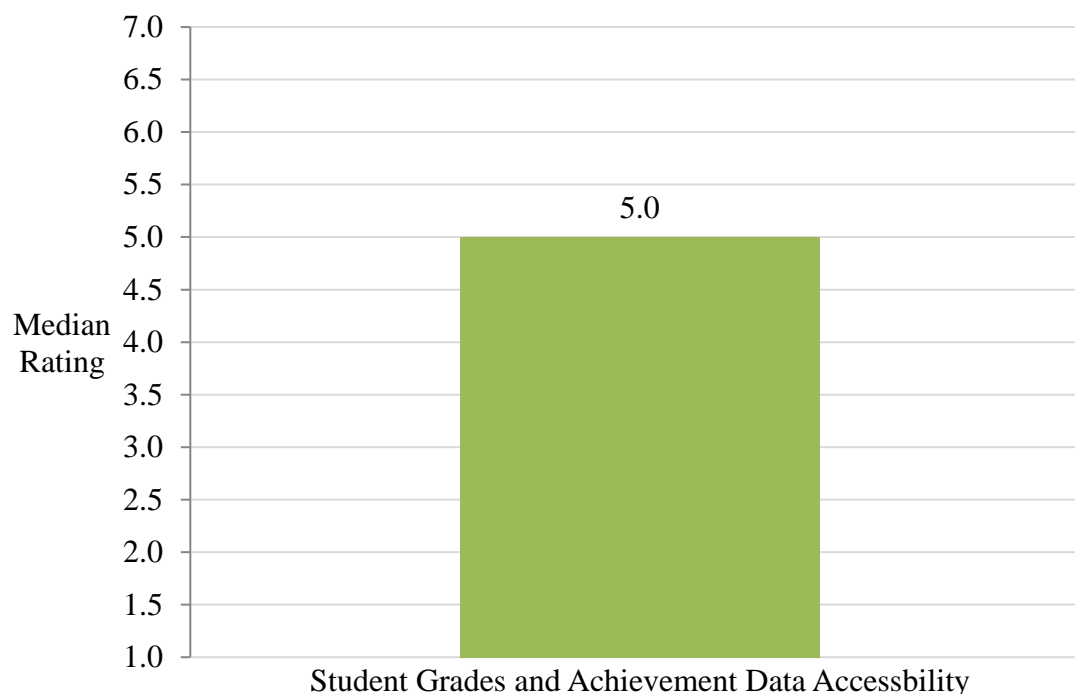


Figure 9. Median of participant ratings for the accessibility of student grades and achievement-related data item on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

Posttest behavior data accessibility results. In the second question of the posttest survey, participants were asked to indicate the level of access they had to their current students' data in the district's data system. As illustrated in Figure 10, participants assessed the accessibility of behavior-related data in the district's data system with a mean rating of 5.3. The maximum rating available was a 7.0. The mean rating for data related to office discipline referrals was 5.5. Accessibility of counseling incident data received a mean rating of 4.9. Similar to the mean rating for office discipline referral data accessibility, the mean rating assigned regarding the accessibility of suspension incident data was 5.5. Tabular depictions of the mean and standard deviation of posttest behavior data accessibility results are included in Table 5.

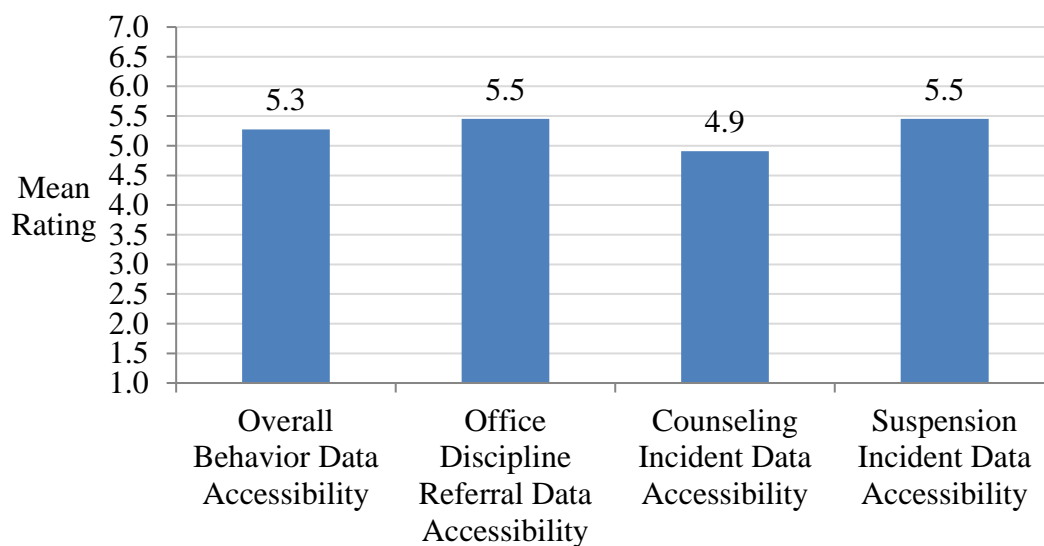


Figure 10. Mean participant rating for the accessibility of behavior-related data items on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

Table 5

Posttest Behavior Data Accessibility Results – Mean and Standard Deviation

Variable	M	SD
Overall Behavior Data Accessibility	5.27	1.69
Office Discipline Referral Data Accessibility	5.45	1.81
Counseling Incident Data Accessibility	4.91	2.12
Suspension Incident Data Accessibility	5.45	1.81

The median value of the distribution of responses from the posttest regarding data accessibility indicates the point at which at least half of the participants rated the maximum accessibility of data in the district's system. The reported median rating for accessibility to behavior-related data was 6.0 for each of the behavior-related data items (Figure 11).

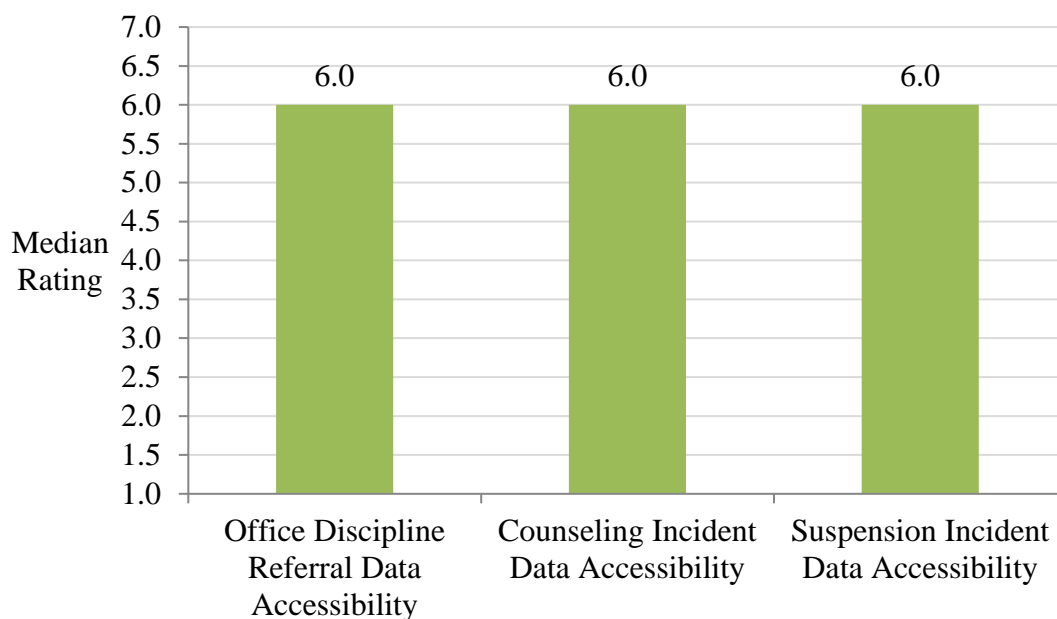


Figure 11. Median of participant ratings for the accessibility of behavior-related data items on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

Posttest attendance and achievement data accessibility results. Based on the participants' posttest appraisal of attendance-related data in the district data system, an overall mean accessibility rating of 6.3 resulted. This information is depicted in Figure 12. Accessibility of student attendance data was rated 6.5 on average. As shown in Figure 13, participants gave a mean rating of 6.5 regarding access to student tardiness information in the district's data system. Additionally, participants' reported a mean rating that was 6.6 when queried about the accessibility of student grades and achievement data in the district's data system. Tabular depictions of the mean and standard deviation of posttest attendance data and student grades and achievement data accessibility results are included in Tables 6 and 7, respectively.

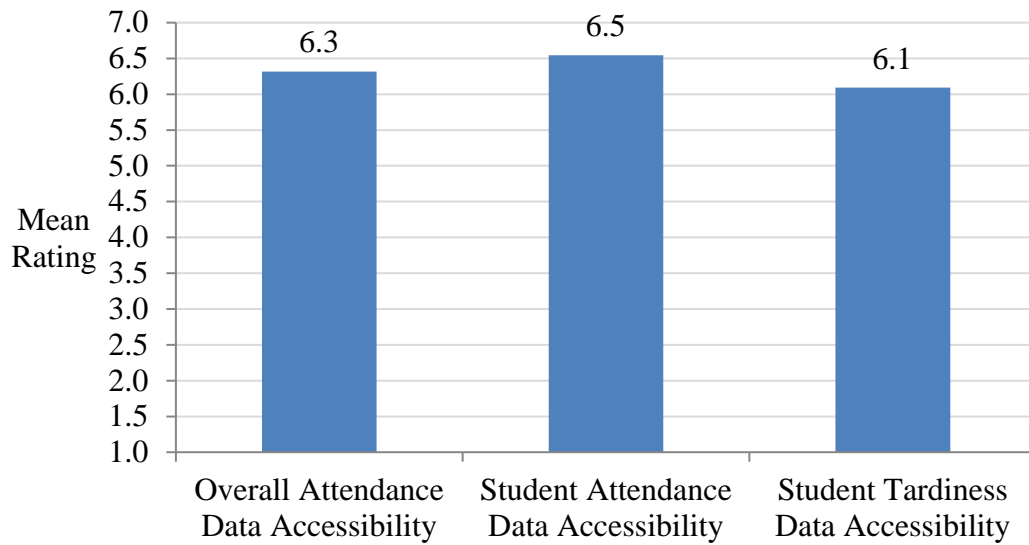


Figure 12. Mean participant rating for the accessibility of attendance-related data items on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

Table 6

Posttest Attendance Data Accessibility Results – Mean and Standard Deviation

Variable	M	SD
Overall Attendance Data Accessibility	6.32	0.51
Student Attendance Data Accessibility	6.55	0.52
Student Tardiness Data Accessibility	6.09	0.70

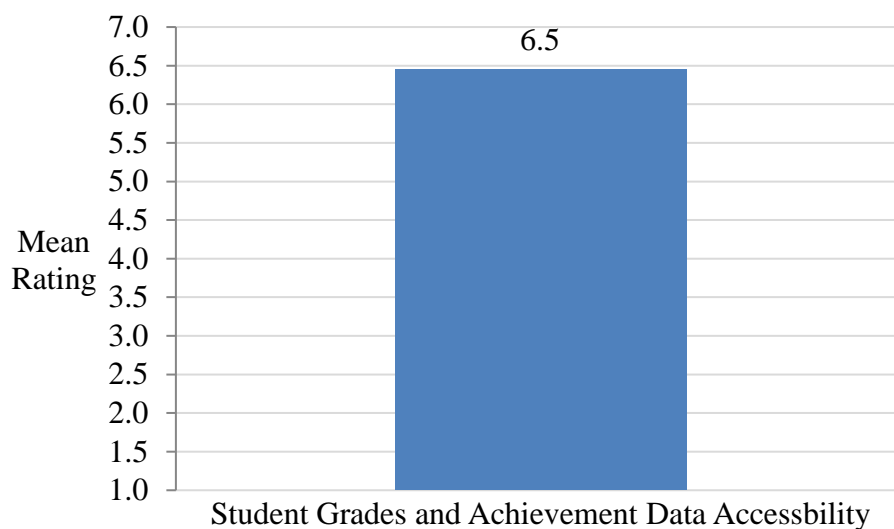


Figure 13. Mean participant rating for the accessibility of the student grades and achievement-related data item on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

Table 7

Posttest Student Grades and Achievement Data Accessibility Results – Mean and Standard Deviation

Variable	M	SD
Student Grades and Achievement Data Accessibility	6.45	0.52

The reported posttest median rating for accessibility to both attendance-related data items was 7.0 for student attendance and 6.0 for student tardiness as indicated in Figure 14.

Additionally, the participants' median rating regarding accessibility to student grades and achievement data in the district's data system was 6.0 (Figure 15).

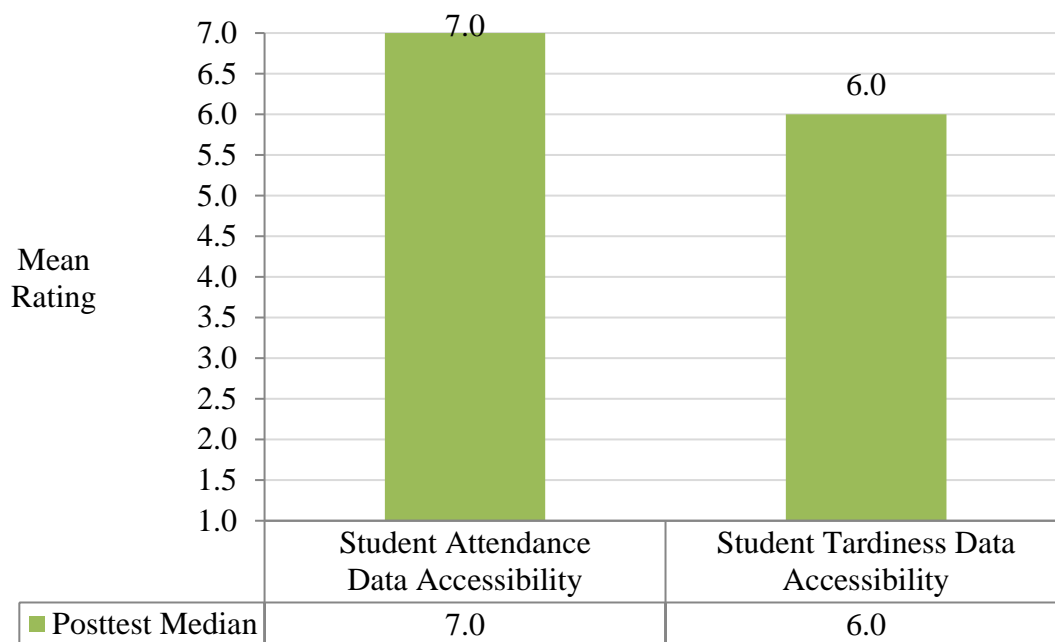


Figure 14. Median of participant ratings for the accessibility of student attendance and student tardiness-related data items on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

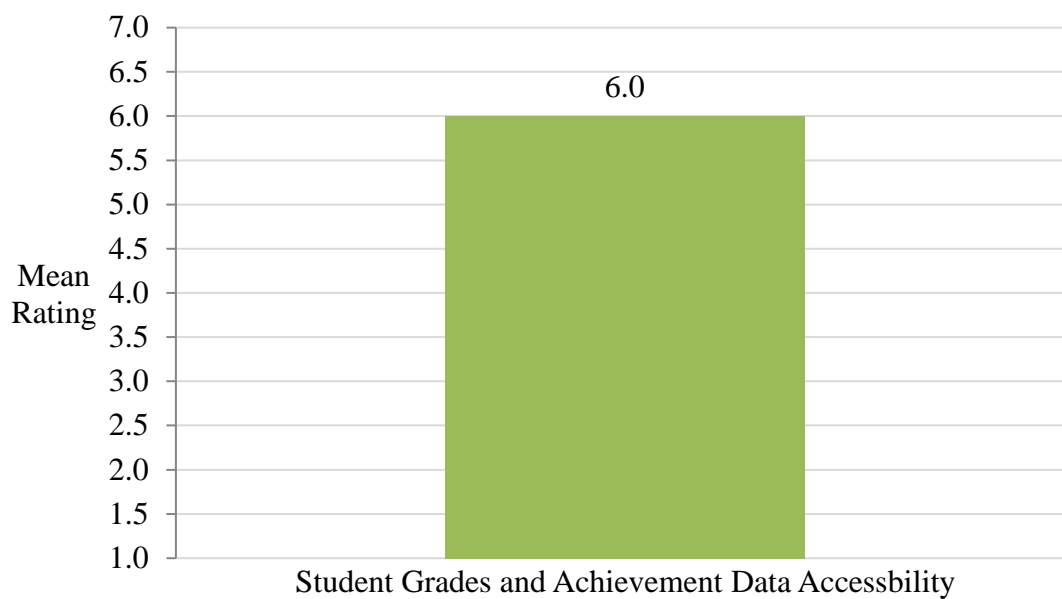


Figure 15. Median of participant ratings for the accessibility of student grades and achievement-related data item on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not accessible) to seven (very easy to access). A total of 11 respondents participated.

Research Question Two

The second research question was: To what extent do SWPBIS teams perceive the usefulness of accessible data in the district's data system? To address research question two, detailed descriptive statistics from the results of the PBIS Data User Survey—questions three, four, and six—from the pretest and posttest were provided. Survey question three requested respondents to rate the usefulness of various types of student data in their SWPBIS implementation efforts. Respondents' possible answer choices for rating the usefulness of data in survey question three (including their numerical point values) were as follows: not useful at all (1), slightly useful (2), moderately useful (3), useful (4), very useful (5), essential (6), and absolutely essential (7). The possible distribution of responses ranged from one – “not useful at all” to seven – “absolutely essential”.

In survey question four, respondents rated the frequency in which they analyzed student data. Survey question six asked that respondents rate the frequency in which SWPBIS team members shared student data. Respondents' possible answer choices for rating their frequency of engaging in data analysis and in sharing data with school staff (including their numerical point values) were as follows: annually (1), at each semester (2), quarterly (3), monthly (4), bi-weekly (5), weekly (6), and daily (7). The possible distribution of responses ranged from one – “annually” to seven – “daily”. The mean ratings and standard deviations from the pretest and posttest for data usefulness (Table 8), including the frequency in which data are analyzed and shared (Table 9), are displayed below. Each of the related data items are discussed in more detail in this section.

Table 8

*Pretest and Posttest Results for Student Behavior, Student Attendance, and Student Achievement**Data Usefulness – Mean and Standard Deviation*

Variable	Pretest		Posttest	
	M	SD	M	SD
Overall Behavior Data Usefulness	3.85	1.92	5.85	1.59
Office Discipline Referral Data Usefulness	3.91	2.07	5.73	1.90
Counseling Incident Data Usefulness	3.55	1.86	5.91	1.38
Suspension Incident Data Usefulness	4.09	2.02	5.91	1.58
Overall Attendance Data Usefulness	4.14	1.83	5.91	1.53
Student Attendance Data Usefulness	4.27	1.79	5.91	1.51
Student Tardiness Data Usefulness	4.00	1.90	5.91	1.58
Student Grades and Achievement Data Usefulness	4.55	2.11	6.55	0.93

Table 9

Pretest and Posttest Results for Frequency of Analysis and Sharing of Data – Mean and Standard Deviation

Variable	Pretest		Posttest	
	M	SD	M	SD
Data Analysis Frequency	4.82	2.23	5.00	1.55
Data Sharing Frequency	3.82	1.66	4.64	1.21

Pretest behavior data usefulness. Figure 16 details that, on average, pretest participants reported a utility rating of 3.8 out of a possible seven regarding the behavior information they were able to access in the district’s data system. Participants’ mean usefulness rating was 3.9 for

office discipline referral data and 3.5 for counseling incident data. Additionally, the average level of usefulness that participants indicated for suspension incident data that was accessible in the district's data system was 4.1. Tabular depictions of the mean and standard deviation of pretest behavior data usefulness results are included in Table 10.

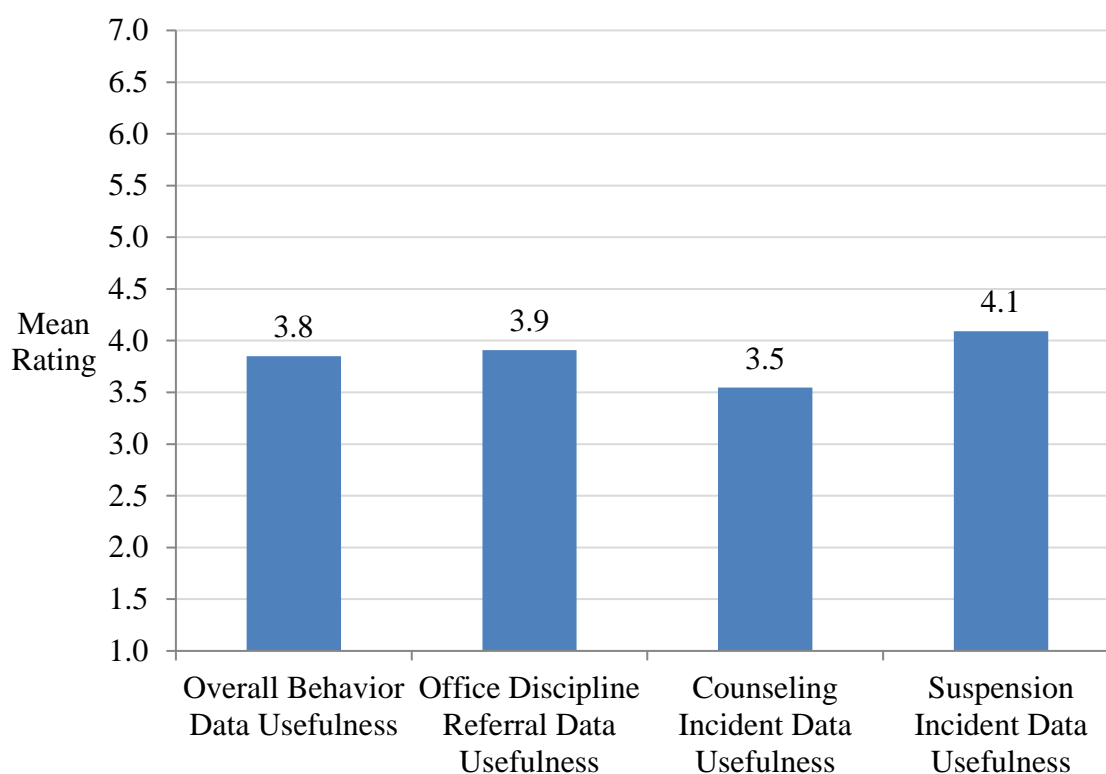


Figure 16. Mean participant rating for the usefulness of behavior-related data items on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

Table 10

Pretest Behavior Data Usefulness Results – Mean and Standard Deviation

Variable	M	SD
Overall Behavior Data Usefulness	3.85	1.92
Office Discipline Referral Data Usefulness	3.91	2.07
Counseling Incident Data Usefulness	3.55	1.86
Suspension Incident Data Usefulness	4.09	2.02

Based on the distribution of participants' responses from the pretest, the median rating regarding the usefulness of accessible behavior, attendance, and grades and achievement data were identified (Figure 17). As the value at the midpoint of the distribution of usefulness rating responses, at least half of the participants indicated the utility of data in the district's system did not exceed this rating. Behavior-related data median ratings for data usefulness ranged from a low of 3.0 for office discipline referrals and counseling incidents to a high of 4.0 for suspension incidents.

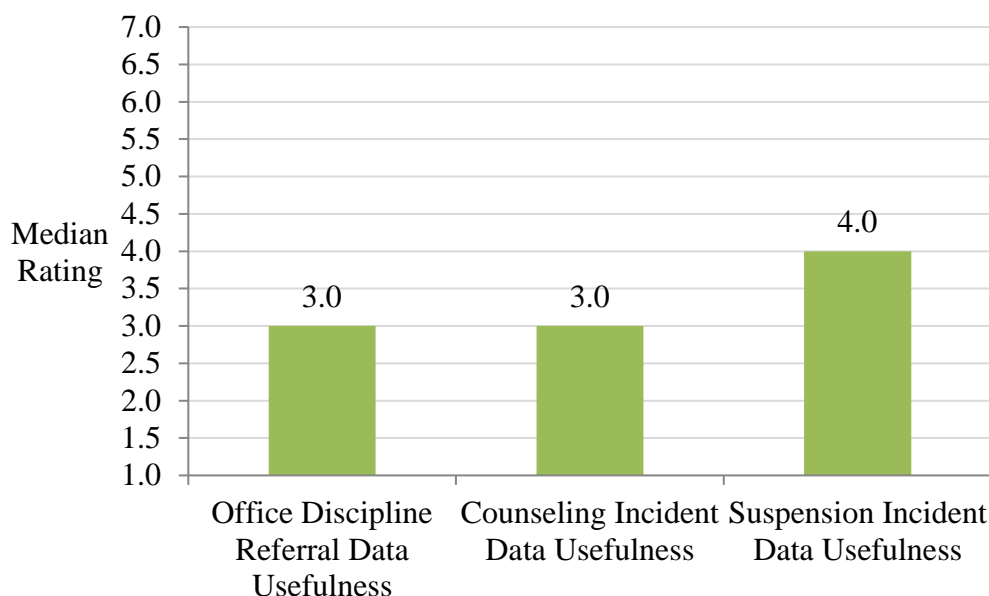


Figure 17. Median of participant ratings for the usefulness of behavior-related data items on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

Pretest attendance and achievement data usefulness results. Participants also appraised the utility of accessible attendance data housed in the district's data system on the pretest. An average overall rating of 4.1 resulted from the participants rating of the two specific areas of attendance data – student attendance and student tardiness (Figure 18). The mean rating participants assigned to the usability of student attendance data included in the district's data system was 4.3. Participants' average rating regarding the usefulness of accessible student tardiness information was 4.0. Also, the average rating participants assigned regarding the helpfulness of student grades and achievement data in the district's data system was 4.5 (Figure 19). Tabular depictions of the mean and standard deviation of pretest attendance data and student grades and achievement data usefulness results are included in Tables 11 and 12, respectively.

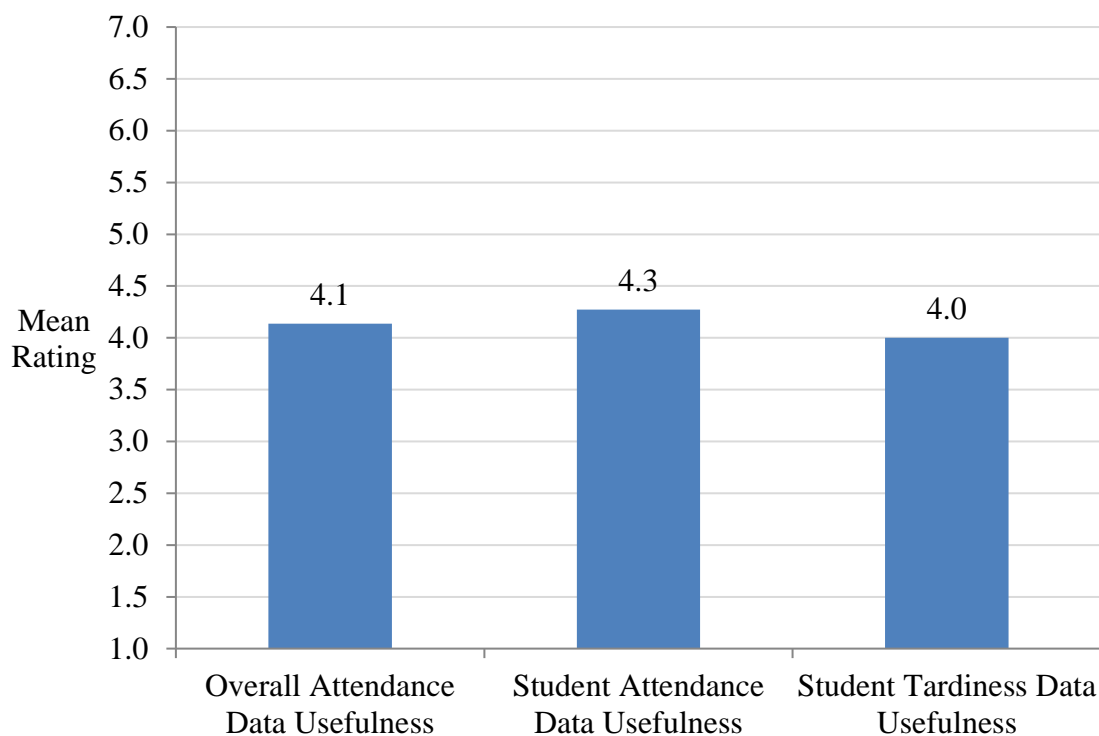


Figure 18. Mean participant rating for the usefulness of attendance-related data items on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

Table 11

Pretest Attendance Data Usefulness Results – Mean and Standard Deviation

Variable	M	SD
Overall Attendance Data Usefulness	4.14	1.83
Student Attendance Data Usefulness	4.27	1.79
Student Tardiness Data Usefulness	4.00	1.90

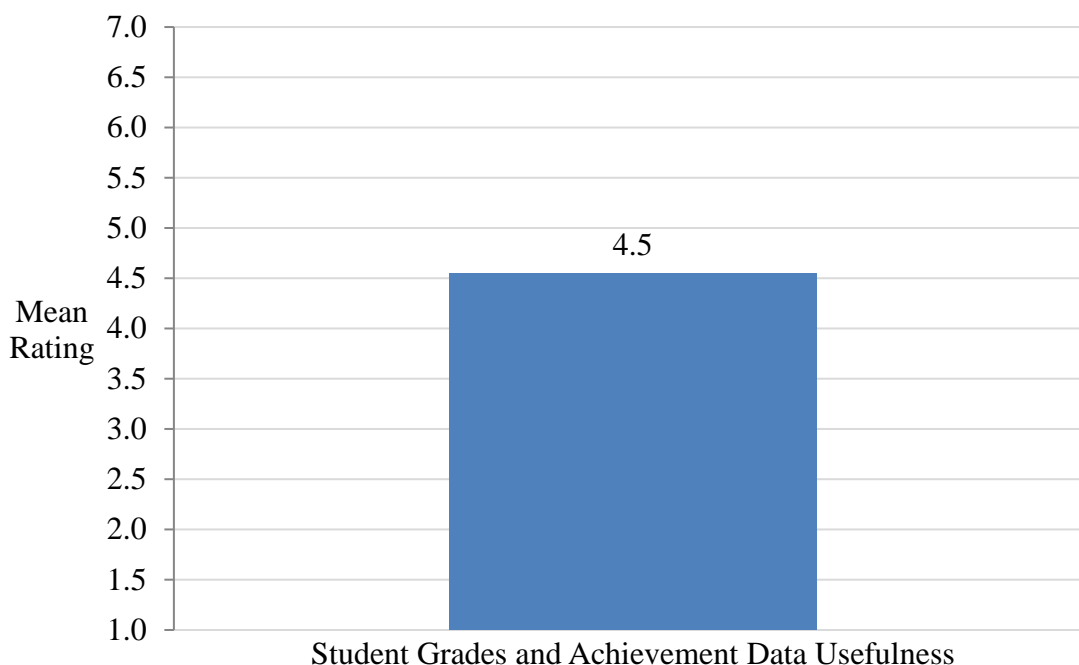


Figure 19. Mean participant rating for the usefulness of student grades and achievement-related data item on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

Table 12

Pretest Student Grades and Achievement Data Usefulness Results – Mean and Standard Deviation

Variable	M	SD
Student Grades and Achievement Data Usefulness	4.55	2.11

Median ratings from the pretest were identified for the usefulness of data related to attendance and students' academic achievement. Attendance related data metrics such as student attendance and student tardiness both received a median rating of 4.0 when participants were queried regarding their usefulness (Figure 20). The median rating regarding the usefulness of

data in the district's data system pertaining to students' grade performance and achievement was 4.0 (Figure 21).

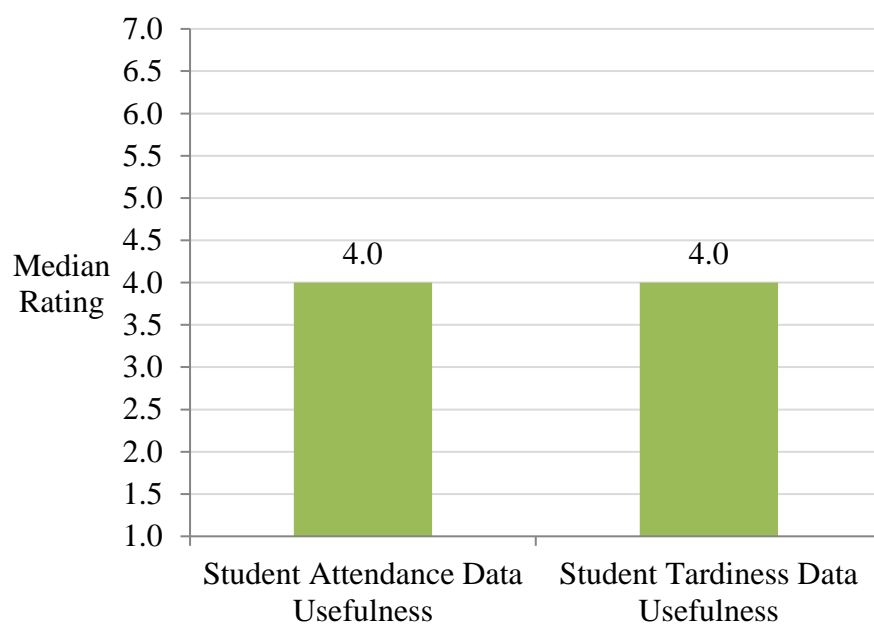


Figure 20. Median of participant ratings for the usefulness of student attendance and student tardiness-related data items on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

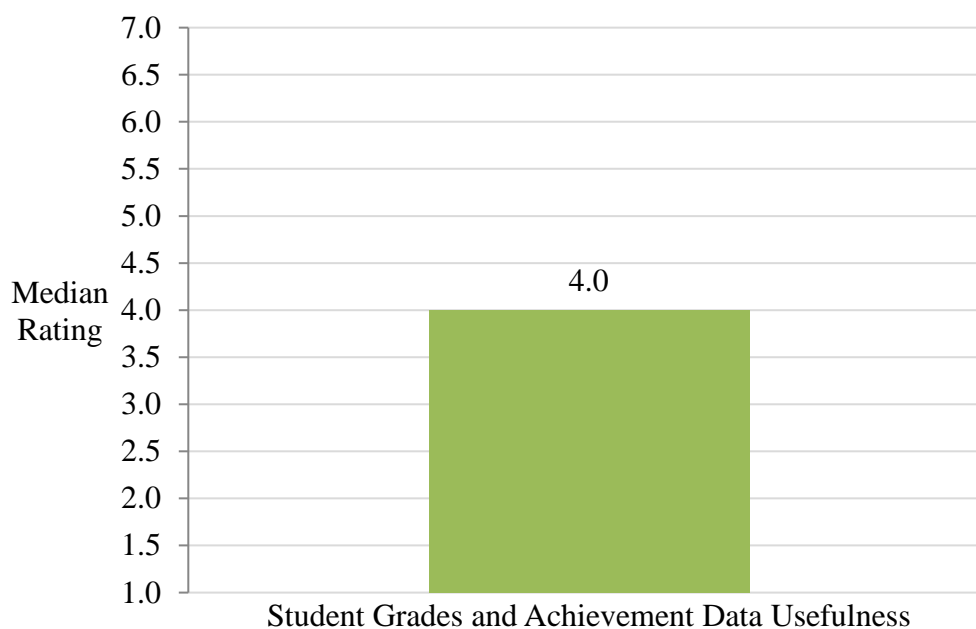


Figure 21. Median of participant ratings for the usefulness of student grades and achievement-related data item on the pretest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

Pretest data analysis and sharing frequency results. Participants rated themselves on their individual frequency of analyzing and sharing data using a scale from one (annually) to seven (daily) (Figure 22). On average, participating SWPBIS team members rated their data analysis frequency at 4.8. Their mean self-reported rating regarding the frequency data sharing was 3.8. Tabular depictions of the mean and standard deviation of pretest data analysis and sharing frequency results are included in Table 13.

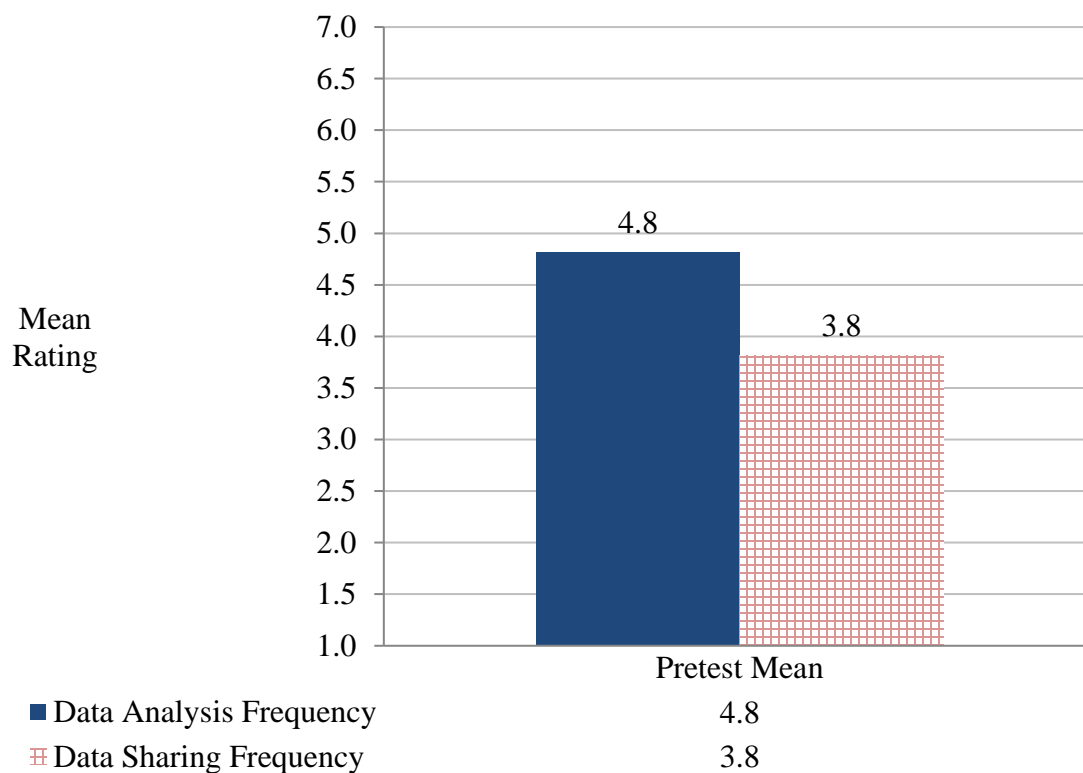


Figure 22. Participant average rating for data analysis and data sharing frequency items on the pretest administration of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated.

Table 13

Pretest Data Analysis and Sharing Frequency Results – Mean and Standard Deviation

Variable	M	SD
Data Analysis Frequency	4.82	2.23
Data Sharing Frequency	3.82	1.66

Posttest behavior data usefulness results. Figure 23 details that, on average, posttest participants reported a utility rating of 5.8 out of a possible seven regarding the behavior information they were able to access in the district's data system. Participants' mean usefulness rating was 5.7 for office discipline referral data. Additionally, the average level of usefulness that participants indicated for both counseling incident data and suspension incident data that was accessible in the district's data system was 5.9. Tabular depictions of the mean and standard deviation of posttest behavior data are included in Table 14.

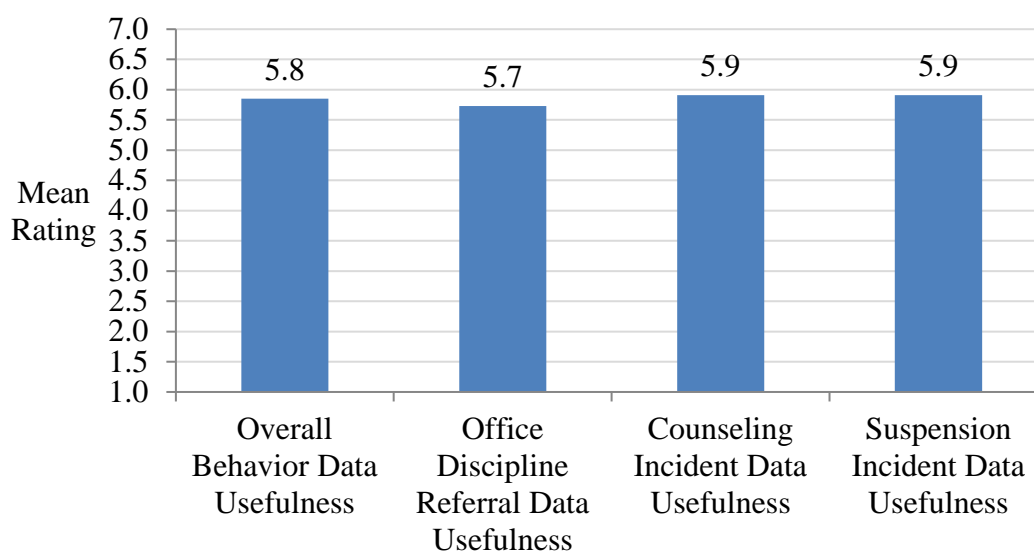


Figure 23. Mean participant rating for the usefulness of behavior-related data items on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

Table 14

Posttest Behavior Data Usefulness Results – Mean and Standard Deviation

Variable	M	SD
Overall Behavior Data Usefulness	5.85	1.59
Office Discipline Referral Data Usefulness	5.73	1.90
Counseling Incident Data Usefulness	5.91	1.38
Suspension Incident Data Usefulness	5.91	1.58

Based on the distribution of participants' responses from the posttest, the median rating regarding the usefulness of accessible behavior, attendance, and grades and achievement data were identified (Figure 24). As the value at the midpoint of the distribution of usefulness rating responses, at least half of the participants indicated the utility of data in the district's system did not exceed this rating. The median ratings regarding the usefulness of behavior-related data items were (a) 7.0 for office discipline referral data, (b) 6.0 for counseling incident data, and (c) 7.0 for suspension incident data.

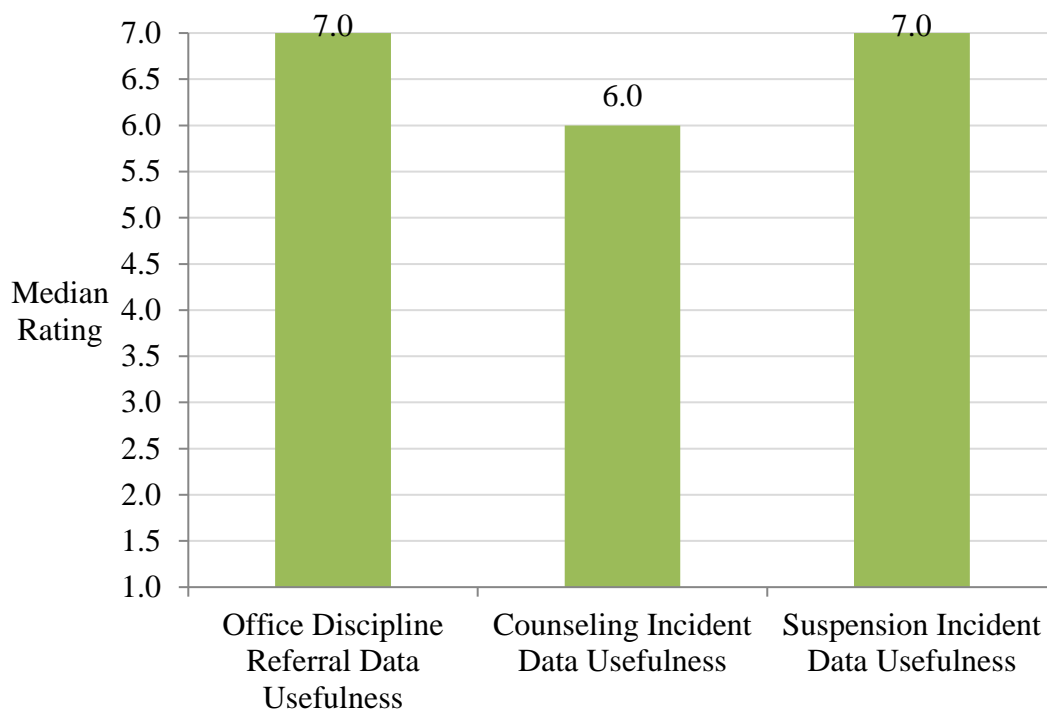


Figure 24. Median of participant ratings for the usefulness of behavior-related data items on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

Posttest attendance and achievement data accessibility results. Participants also appraised the utility of accessible attendance data housed in the district's data system. An average overall rating of 5.8 resulted from the participants rating of the two specific areas of attendance data – student attendance and student tardiness (Figure 25). The mean rating participants assigned to the usability of attendance-related data included in the district's data system was 5.9 overall and for both student attendance data and student tardiness data. Also, the average rating participants assigned regarding the helpfulness of student grades and achievement data in the district's data system was 6.5 (Figure 26). Tabular depictions of the mean and standard deviation of posttest attendance data and student grades and achievement data usefulness results are included in Tables 15 and 16, respectively.

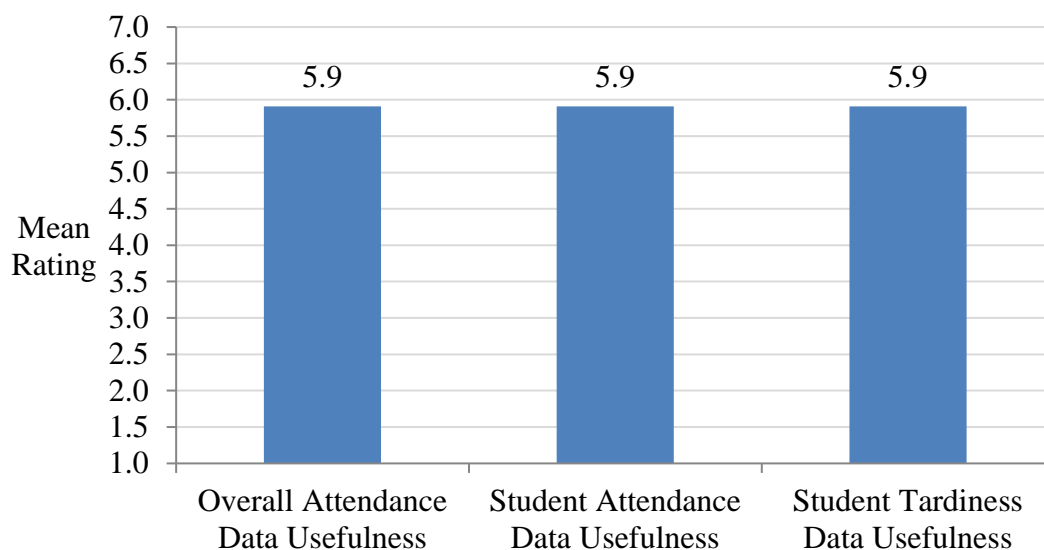


Figure 25. Mean participant rating for the usefulness of attendance-related data items on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

Table 15

Posttest Attendance Data Usefulness Results – Mean and Standard Deviation

Variable	M	SD
Overall Attendance Data Usefulness	5.91	1.53
Student Attendance Data Usefulness	5.91	1.51
Student Tardiness Data Usefulness	5.91	1.58

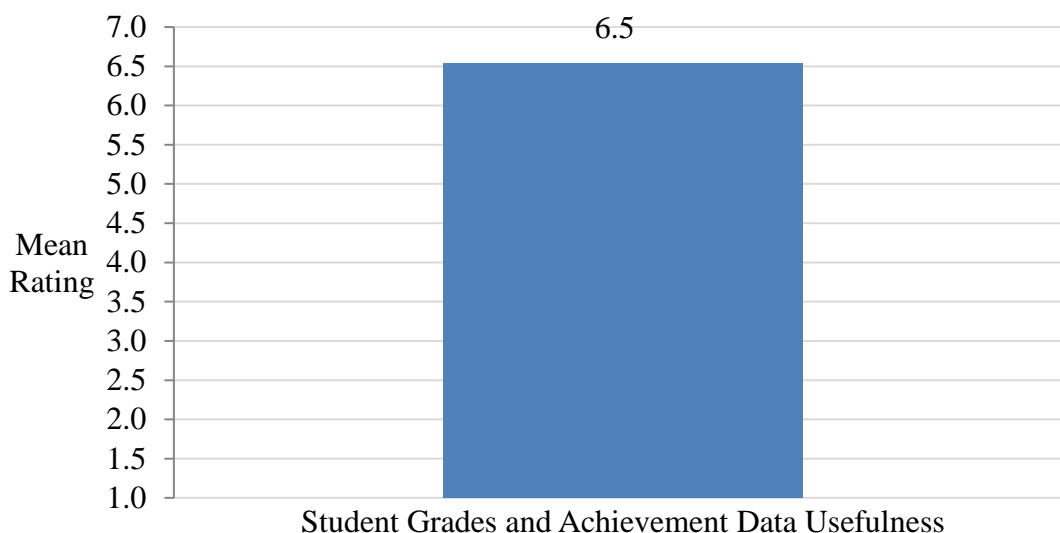


Figure 26. Mean participant rating for the usefulness of student grades and achievement-related data item on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

Table 16

Posttest Student Grades and Achievement Data Usefulness Results – Mean and Standard Deviation

Variable	M	SD
Student Grades and Achievement Data Usefulness	6.55	0.93

Median ratings from the posttest were identified regarding the helpfulness of data related to attendance and students' academic achievement. Attendance related data metrics such as student attendance and student tardiness both received a median rating of 6.0 when participants were queried regarding their usefulness (Figure 27). The usefulness of data in the district's data system pertaining to students' grade performance and achievement also received a median rating of 7.0 (Figure 28).

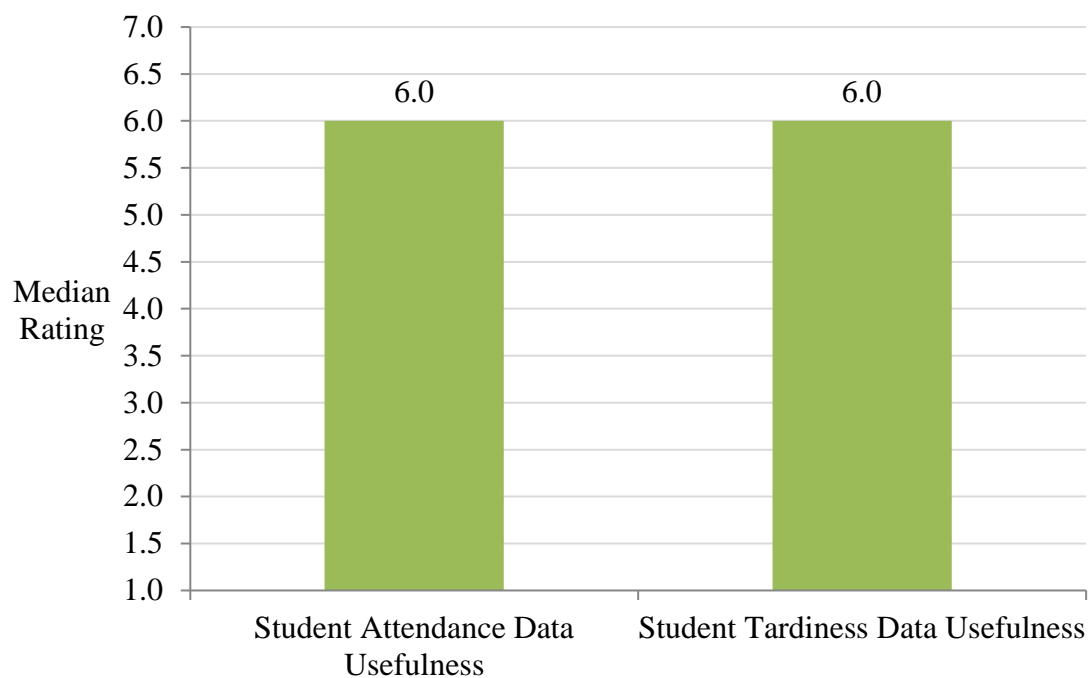


Figure 27. Median of participant ratings for the usefulness of student attendance and student tardiness-related data items on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

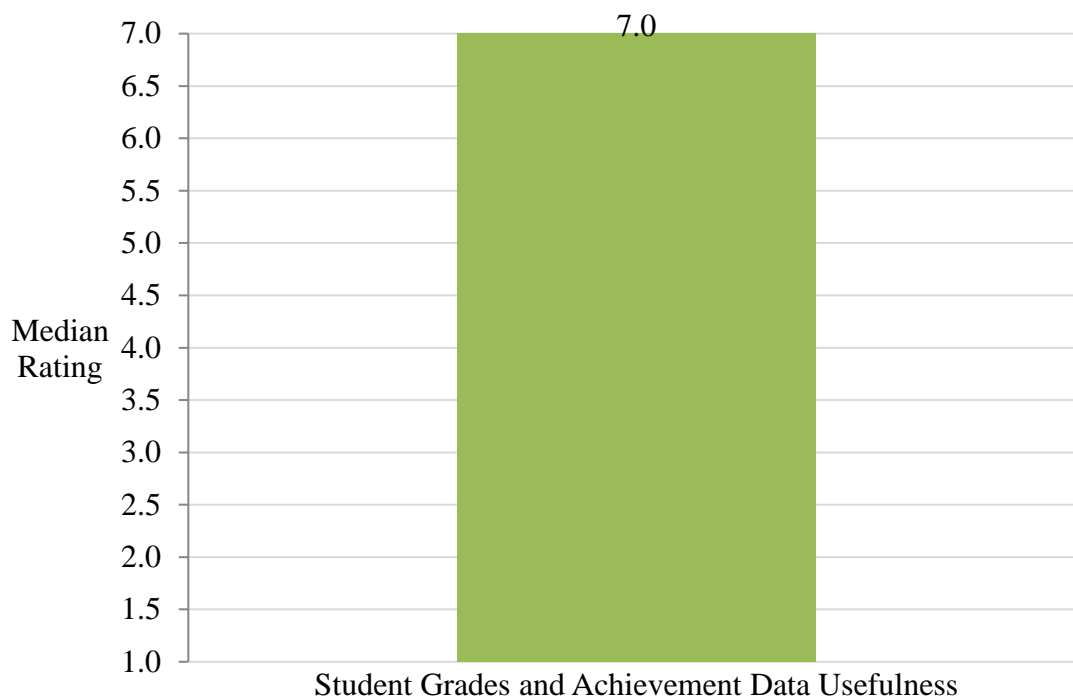


Figure 28. Median of participant ratings for the usefulness of student grades and achievement-related data item on the posttest administration of the PBIS Data User Survey. Possible responses ranged from one (not useful at all) to seven (absolutely essential). A total of 11 respondents participated.

Participants rated themselves on their individual frequency of analyzing and sharing data using a scale from one (annually) to seven (daily) (Figure 29). On average, participating SWPBIS team members rated their data analysis frequency at 5.0. Their mean self-reported rating regarding the frequency of data sharing was 4.6. Tabular depictions of the mean and standard deviation of data analysis and sharing frequency results are included in Table 17.

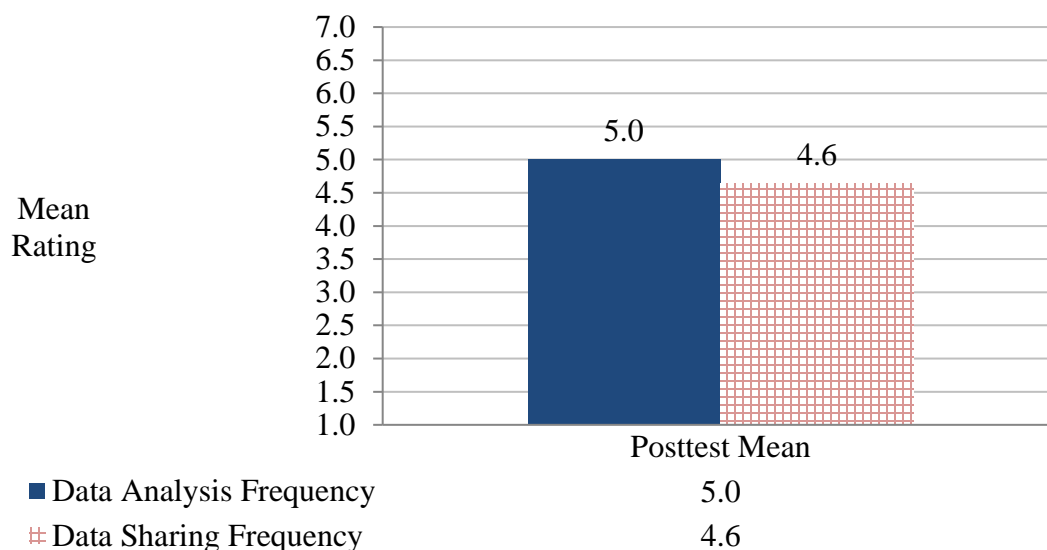


Figure 29. Participant average rating for data analysis and data sharing frequency items on the posttest administration of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated.

Table 17

Posttest Data Analysis and Sharing Frequency Results – Mean and Standard Deviation

Variable	M	SD
Data Analysis Frequency	5.00	1.55
Data Sharing Frequency	4.64	1.21

Research Question Three

The third research question was: What impact did professional development have on SWPBIS team members' ability to access and use student data? Were there increases in the team members' perception regarding data accessibility and usefulness from the pretest survey to the posttest survey, including in the frequency in which data were analyzed and shared? If there were increases in team members' data perceptions, were the increases significant?

While the professional development intervention provided in this study was designed to focus on student data related to their behavior, attendance, and achievement, participants appeared to express greater interest in exploring behavior and attendance reports. Prior to this training, participants had some level of awareness regarding student achievement because all students participated in either tri-annual benchmark assessments and / or annual state mandated assessment in English Language Arts or math. Results from these assessments were sent to the school periodically, and staff were provided training on how to read and analyze the related reports.

However, the researcher observed that participants appeared to be unfamiliar with the reports concerning student behavior and attendance. Unlike reports containing student test results, these reports were made available in the district's data system and they could be retrieved by the personnel electronically. District personnel did not send these reports to sites on a scheduled basis. Participants also appeared to be unaware that behavior and attendance reports were available to them on a weekly basis because the district had integrated the data system to maintain student behavior, attendance, and achievement data. Although the researcher took note of the participants' interest in the behavior and attendance reports, the professional development agenda was adhered to in order to provide standardization when this study is replicated.

The null hypothesis was that there was no significant difference between the results of the pretest and posttest administration of the PBIS Data Use Survey in how SWPBIS team members accessed, used, and shared out data with other school personnel. Paired-samples *t* test analyses were completed using Microsoft Excel 10 Data Analysis. The one-tailed directional *t* test statistic was used to compare observations as the researcher determined that the provision of additional information received by participants in the intervention phase should not result in a

decrease in their ability to access, use, or share data. The results of the t tests comparing the accessibility (Table 18) and usefulness of data (Table 19) are included below. A discussion of the data items are contained in this section.

Table 18

t-test Results for PBIS Data Use Survey Pretest and Posttest Administration Comparison – Data Accessibility

Variable	Pretest		Posttest		t-value	prob
	M	SD	M	SD		
Office Discipline Referral Data	2.91	1.45	5.45	1.81	-3.748	$p < .01$
Counseling Incident Data Accessibility	2.36	1.57	4.91	2.12	-3.048	$p < .01$
Suspension Incident Data Accessibility	2.55	1.63	5.45	1.81	-4.276	$p < .01$
Student Attendance Data Accessibility	4.09	2.39	6.55	0.52	-3.418	$p < .01$
Student Tardiness Data Accessibility	3.82	2.18	6.09	0.70	-3.238	$p < .01$
Student Grades and Achievement Data Accessibility	4.27	2.15	6.45	0.52	-3.248	$p < .01$

Table 19

t-test Results for PBIS Data Use Survey Pretest and Posttest Administration Comparison – Data Usefulness

Variable	Pretest		Posttest		t-value	prob
	M	SD	M	SD		
Office Discipline Referral Data	3.91	2.07	5.73	1.90	-1.971	.039
Counseling Incident Data Usefulness	3.55	1.86	5.91	1.38	-3.135	$p < .01$
Suspension Incident Data Usefulness	4.09	2.02	5.91	1.58	-2.164	.028
Student Attendance Data Usefulness	4.27	1.79	5.91	1.51	-2.136	.029
Student Tardiness Data Usefulness	4.00	1.90	5.91	1.58	-2.313	.022
Student Grades and Achievement Data	4.55	2.11	6.55	0.93	-2.708	.011

Respondents' ratings related to the accessibility of several behavioral-related data items—including office discipline referrals, counseling incidents, and suspension incidents—were solicited on the pretest and posttest surveys. There were differences in the mean office discipline data accessibility ratings between the pretest and posttest surveys. The mean rating for office discipline referral data accessibility was 2.9 in the pretest survey, and the mean rating increased to 5.5 on the posttest survey (Figure 28). The increase in the mean accessibility rating from the pretest to the posttest was significant, $t(10) = -3.748$, $p < .01$ (see Table 15).

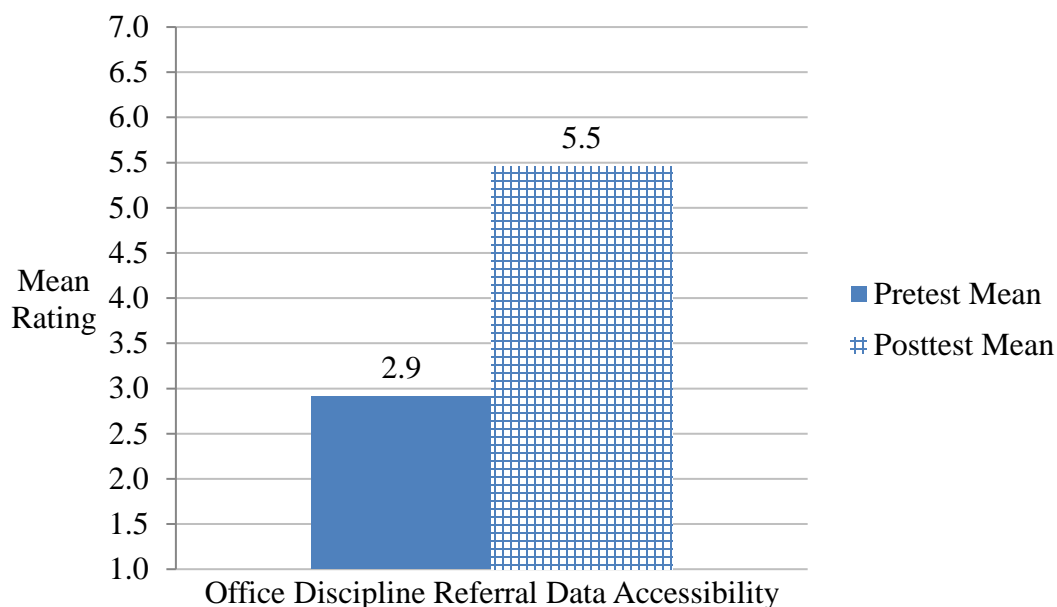


Figure 30. Participant average ratings for office discipline referral data accessibility items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 20

Comparison of Means for Office Discipline Referral Data Accessibility

Outcome	M	SD	t-value	df
Pretest Office Discipline Referral Data Accessibility	2.91	1.45	-3.748*	10
Posttest Office Discipline Referral Data Accessibility	5.45	1.81		

* $p < .05$.

There were also differences in the mean counseling incident data accessibility ratings between the pretest and posttest surveys. The mean rating related to the accessibility of counseling incident data increased from 2.4 on the pretest survey to 4.9 on the posttest survey

(Figure 31). The increase in the mean counseling incident data accessibility rating from the pretest to the posttest was significant, $t(10) = -3.048$, $p < .01$ (see Table 21).

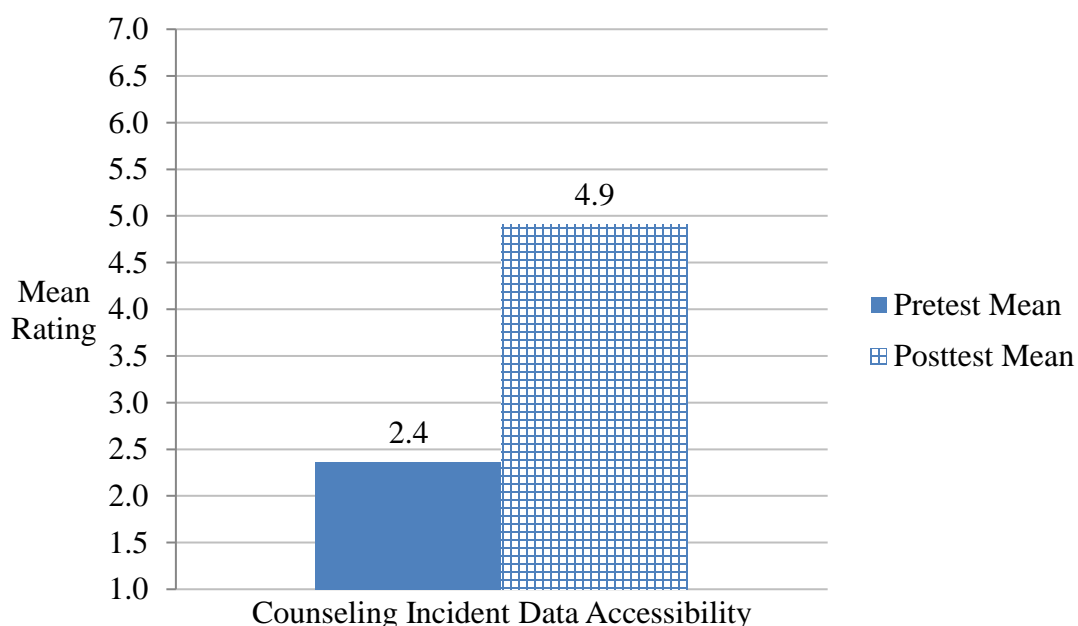


Figure 31. Participant average ratings for counseling incident data accessibility items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 21

Comparison of Means for Counseling Incident Data Accessibility

Outcome	M	SD	t-value	df
Pretest Counseling Incident Data Accessibility	2.36	1.57	-3.048*	10
Posttest Counseling Incident Data Accessibility	4.91	2.12		

* $p < .05$.

Differences were also found in the mean suspension incident data accessibility ratings between the pretest and posttest surveys. The mean rating of related to the accessibility of

suspension incident data increased from 2.5 on the pretest to 5.5 on the posttest (Figure 32). The increase in the mean rating related to the accessibility of suspension incident data was significant, $t(10) = -4.276, p < .01$ (see Table 22).

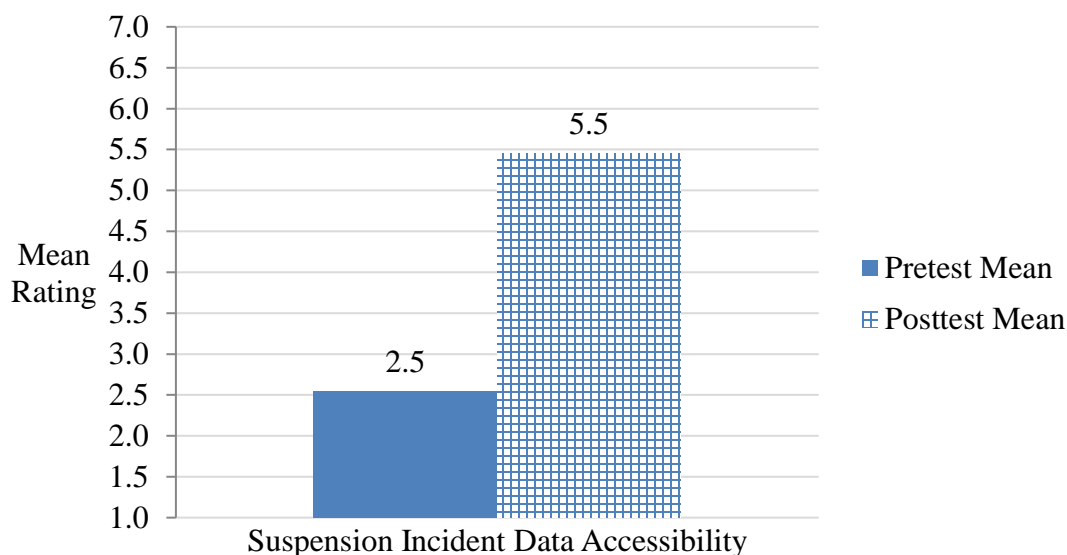


Figure 32. Participant average ratings for suspension incident data accessibility items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 22

Comparison of Means for Suspension Incident Data Accessibility

Outcome	M	SD	t-value	df
Pretest Suspension Incident Data Accessibility	2.55	1.63	-4.276*	10
Posttest Suspension Incident Data Accessibility	5.45	1.81		

* $p < .05$.

Reported mean ratings related to the accessibility of attendance and achievement data were also compared and analyzed. There were differences in the mean student attendance data

accessibility ratings between the pretest and posttest surveys. The mean rating for student attendance data accessibility was 4.1 in the pretest survey, and the mean rating increased to 6.5 on the posttest survey (Figure 33). The increase in the mean usefulness rating from the pretest to the posttest was significant, $t(10) = -3.418, p < .01$ (see Table 23).

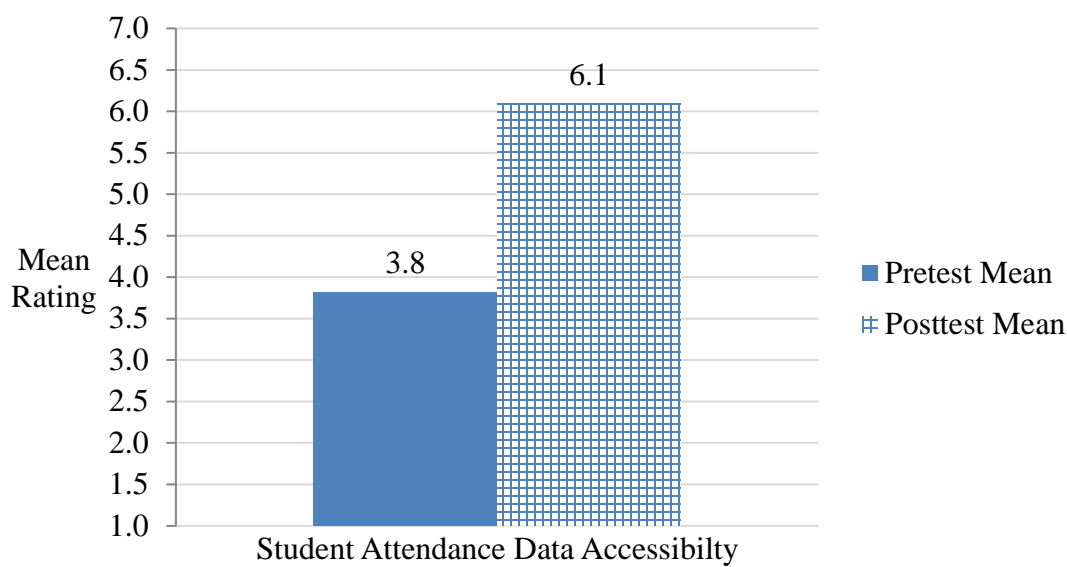


Figure 33. Participant average ratings for student attendance data accessibility items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 23

Comparison of Means for Student Attendance Data Accessibility

Outcome	M	SD	t-value	df
Pretest Student Attendance Data Accessibility	4.09	2.39	-3.418*	10
Posttest Student Attendance Data Accessibility	6.55	0.52		

* $p < .05$.

There were also changes in the mean student tardiness data accessibility ratings between the pretest and posttest surveys. The mean rating for student tardiness data accessibility was 3.8 and 6.1 on the pretest and posttest, respectively (Figure 34). The increase in this rating was significant, $t(10) = -3.238$, $p < .01$ (see Table 24).

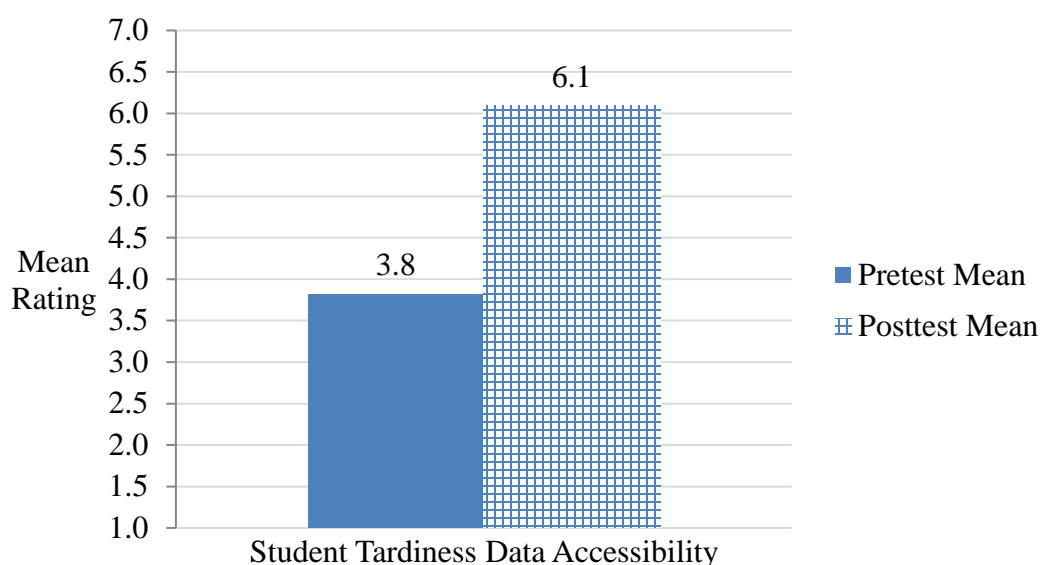


Figure 34. Participant average ratings for student tardiness data accessibility items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 24

Comparison of Means for Student Tardiness Data Accessibility

Outcome	M	SD	t-value	df
Pretest Student Tardiness Data Accessibility	3.82	2.18	-3.238*	10
Posttest Student Tardiness Data Accessibility	6.09	0.70		

* $p < .05$.

The final rating reported with respect to data accessibility pertained to student grade and achievement data. Respondents rated the accessibility of these data in the district's data system on both the pretest and posttest surveys. There were changes in the mean student grade and achievement data accessibility ratings between the two surveys. The mean ratings for the accessibility of this data accessibility were 4.3 and 6.5 on the pretest and posttest, respectively (Figure 35). The increase in this rating was significant, $t(10) = -3.248$, $p < .01$ (see Table 25).

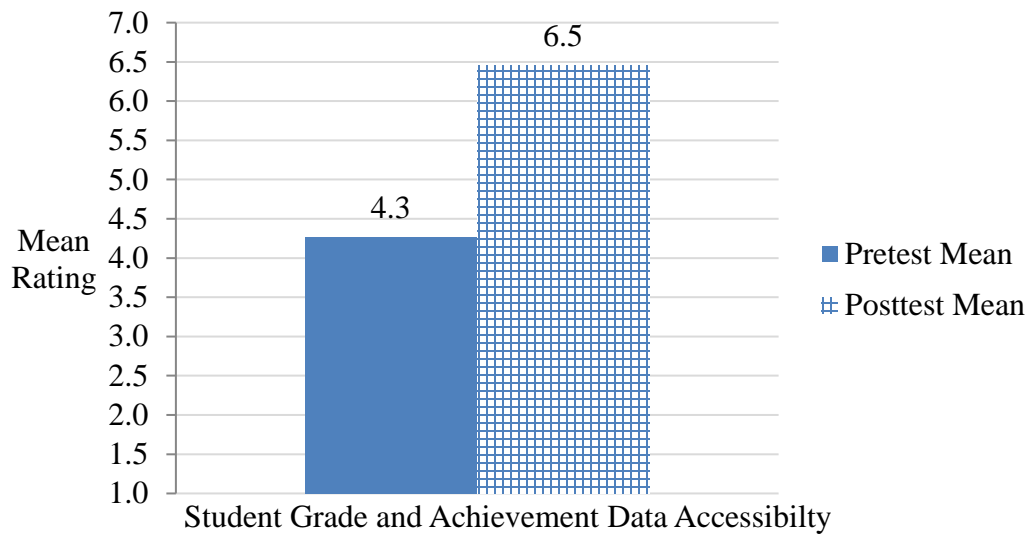


Figure 35. Participant average ratings for student grades and achievement data accessibility items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 25

Comparison of Means for Student Grade and Achievement Data Accessibility

Outcome	M	SD	n	t-value	df
Pretest Student Grade and Achievement Data Accessibility	4.27	2.15	11	-3.248*	10
Posttest Student Grade and Achievement Data Accessibility	6.45	0.52	11		

* $p < .05$.

Ratings on the usefulness of several behavior-related data items—including office discipline referrals, counseling incidents, and suspension incidents – were included on the pretest and posttest surveys. There were differences in the mean office discipline data usefulness ratings

between the pretest and posttest surveys. The mean rating for office discipline referral data usefulness was 3.9 in the pretest survey, and the mean rating increased to 5.7 on the posttest survey (Figure 36). The increase in the mean usefulness rating from the pretest to the posttest was significant, $t(10) = -1.971$, $p = .039$ (see Table 26).

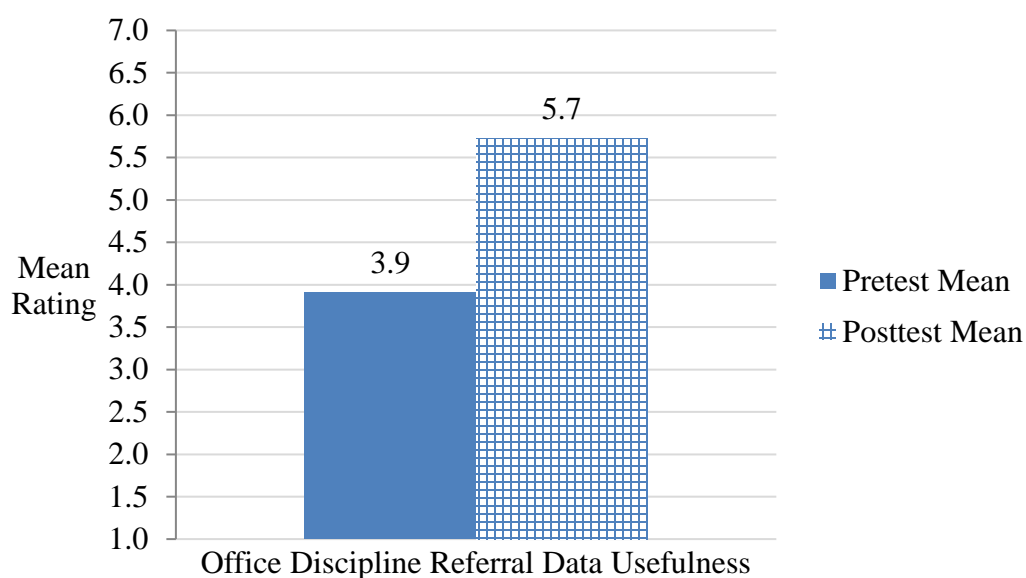


Figure 36. Participant average ratings for office discipline referral data usefulness items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 26

Comparison of Means for Office Discipline Referral Data Usefulness

Outcome	M	SD	t-value	df
Pretest Office Discipline Referral Data Usefulness	3.91	2.07	-1.971*	10
Posttest Office Discipline Referral Data Usefulness	5.73	1.90		

* $p < .05$.

There were also differences in the mean counseling incident data usefulness ratings between the pretest and posttest surveys. The mean rating related to the usefulness of counseling incident data increased from 3.5 on the pretest survey to 5.9 on the posttest survey (Figure 37). The increase in the mean counseling incident data usefulness rating from the pretest to the posttest was significant, $t(10) = -3.135, p < .01$ (see Table 27).

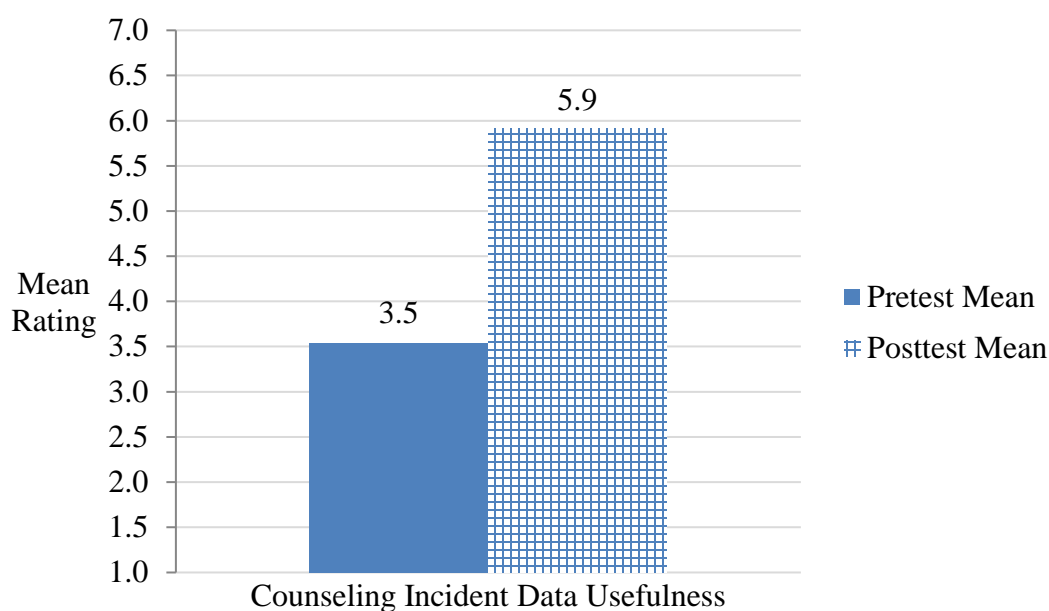


Figure 37. Participant average ratings for counseling incident data usefulness items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 27

Comparison of Means for Counseling Incident Data Usefulness

Outcome	M	SD	n	t-value	df
Pretest Counseling Incident Data Usefulness	3.55	1.86	11	-3.135*	10
Posttest Counseling Incident Data Usefulness	5.91	1.38	11		

* $p < .05$.

Differences were also found in the mean suspension incident data usefulness ratings between the pretest and posttest surveys. The mean rating of related to the usefulness of suspension incident data increased from 4.1 on the pretest to 5.9 on the posttest (Figure 38). The increase in the mean rating related to the usefulness of suspension incident data was significant, $t(10) = -2.164, p = .028$ (see Table 28).

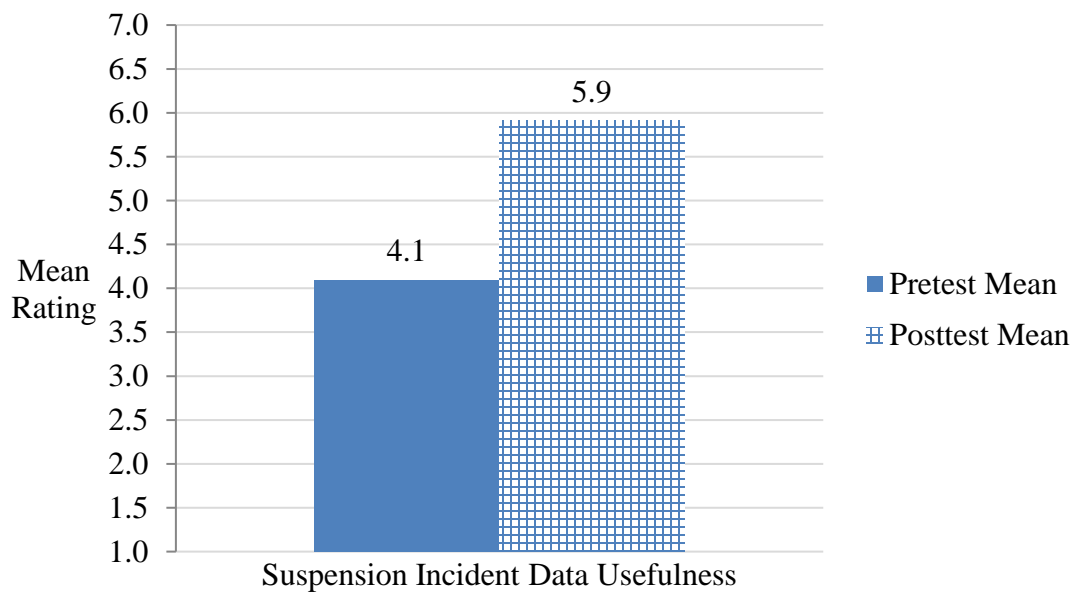


Figure 38. Participant average ratings for suspension incident data usefulness items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 28

Comparison of Means for Suspension Incident Data Usefulness

Outcome	M	SD	t-value	df
Pretest Suspension Incident Data Usefulness	4.09	2.02	-2.164*	10
Posttest Suspension Incident Data Usefulness	5.91	1.58		

* $p < .05$.

Reported mean ratings related to the usefulness of attendance and achievement data were also compared and analyzed. There were differences in the mean student attendance data usefulness ratings between the pretest and posttest surveys. The mean rating for student attendance data usefulness was 4.3 in the pretest survey, and the mean rating increased to 5.9 on the posttest survey (Figure 39). The increase in the mean usefulness rating from the pretest to the posttest was significant, $t(10) = -2.136$, $p = .029$ (see Table 29).

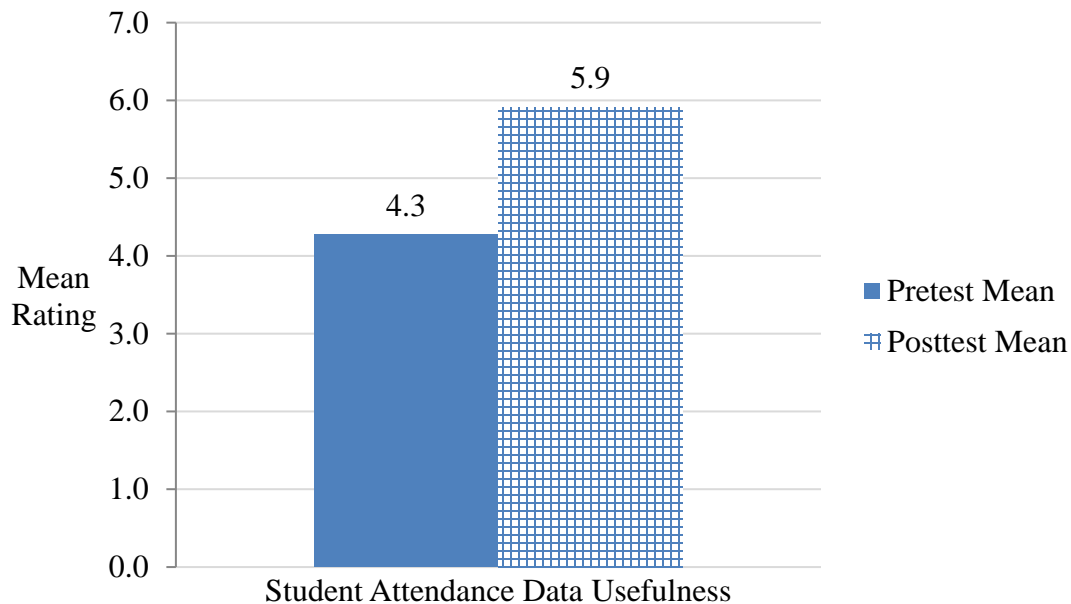


Figure 39. Participant average ratings for student attendance data usefulness items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 29

Comparison of Means for Student Attendance Data Usefulness

Outcome	M	SD	t-value	df
Pretest Student Attendance Data Usefulness	4.27	1.79	-2.136*	10
Posttest Student Attendance Data Usefulness	5.91	1.51		

* $p < .05$.

There were also changes in the mean student tardiness data usefulness ratings between the pretest and posttest surveys. The mean rating for student tardiness data usefulness was 4.0 and 5.9 on the pretest and posttest, respectively (Figure 40). The increase in this rating was significant, $t(10) = -2.313$, $p = .022$ (see Table 30).

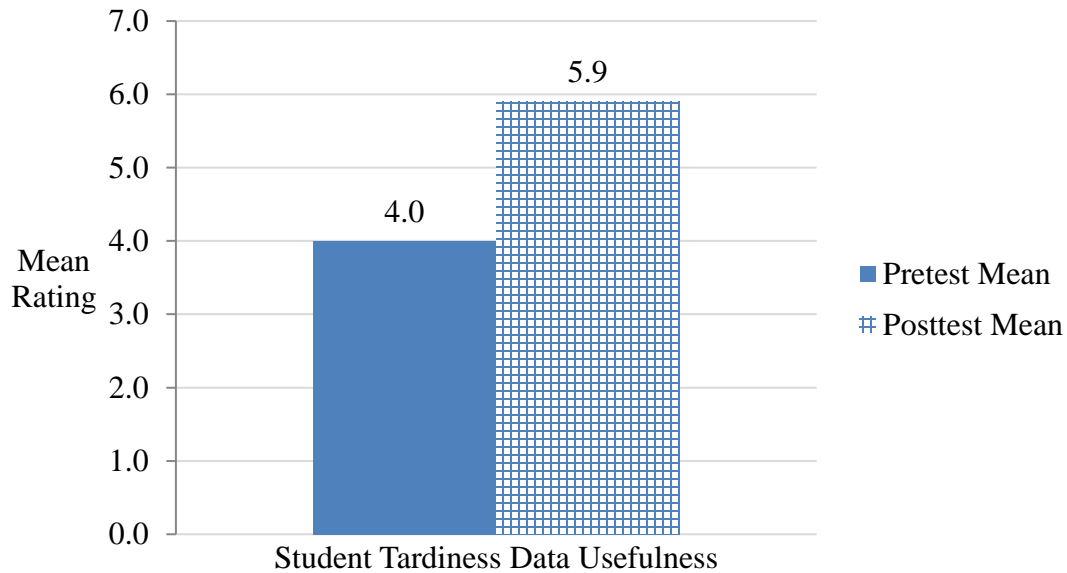


Figure 40. Participant average ratings for student tardiness data usefulness items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 30

Comparison of Means for Student Tardiness Data Usefulness

Outcome	M	SD	t-value	df
Pretest Student Tardiness Data Usefulness	4.00	1.90	-2.313*	10
Posttest Student Tardiness Data Usefulness	5.91	1.58		

* $p < .05$.

Respondents also rated the usefulness of these data in the district's data system on both the pretest and posttest surveys. There were changes in the mean student grade and achievement data usefulness ratings between the two surveys. The mean ratings for the usefulness of this data usefulness were 4.5 and 6.5 on the pretest and posttest, respectively (Figure 41). The increase in this rating was significant, $t(10) = -2.708$, $p = .011$ (see Table 31).

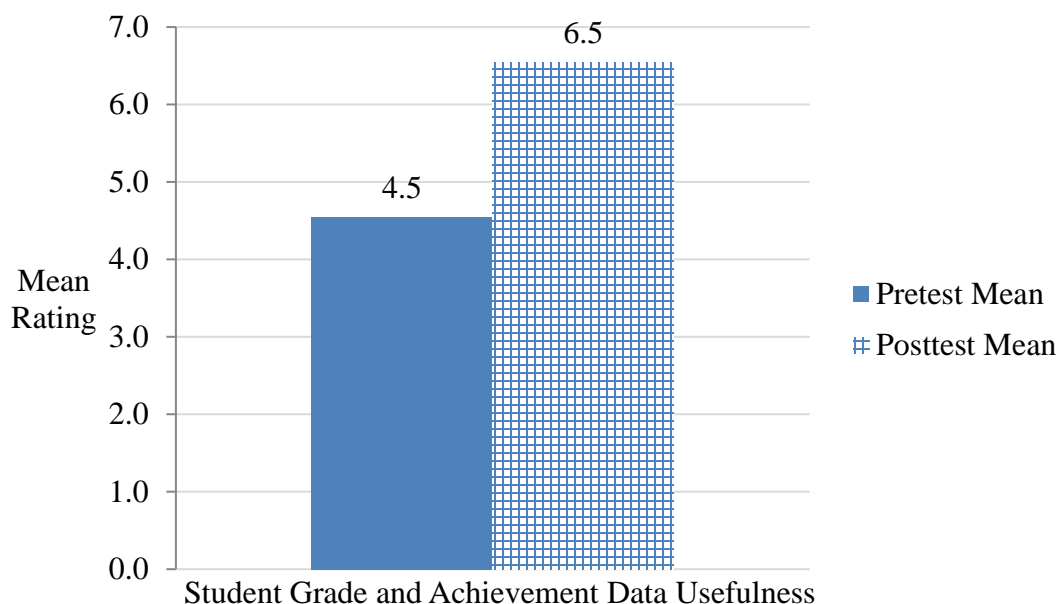


Figure 41. Participant average ratings for student grade and achievement data usefulness items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 31

Comparison of Means for Student Grade and Achievement Data Usefulness

Outcome	M	SD	t-value	df
Pretest Student Grade and Achievement Data Usefulness	4.55	2.11	-2.708*	10
Posttest Student Grade and Achievement Data Usefulness	6.55	0.93		

* $p < .05$.

The final areas were the frequencies related to analysis and sharing of data. On both the pretest and posttest surveys, respondents reported the rate they analyze data. The mean frequency rates for analyzing data were 4.8 and 5.0 on the pretest and posttest, respectively

(Figure 42). While a comparison of the mean rates revealed an increase from the first to the second mean, this increase was not significant (Table 32).

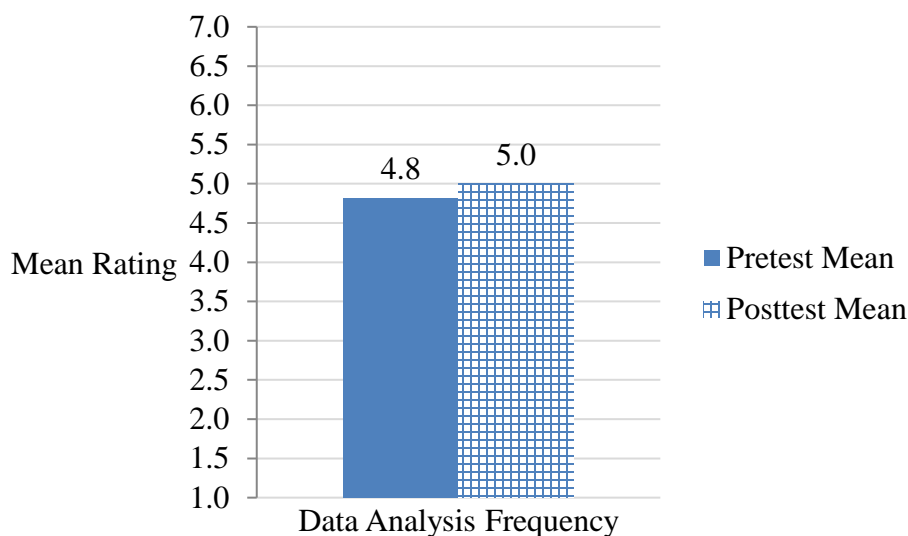


Figure 42. Participant average ratings for data analysis frequency items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 32

Comparison of Means for Data Analysis Frequency

Outcome	M	SD	t-value	df
Pretest Data				
Analysis	4.82	2.23	-0.219*	10
Frequency				
Posttest Data				
Analysis	5.00	1.55		
Frequency				

* $p > .05$.

An analysis of the mean frequency rates for sharing data from the pretest and posttest surveys was also completed. There was an increase in the mean frequency rate for sharing data

between the two surveys – from 3.8 to 4.6 (Figure 43). The increase in the data sharing rate among respondents was significant, $t(10) = -2.516$, $p = .015$ (see Table 33).

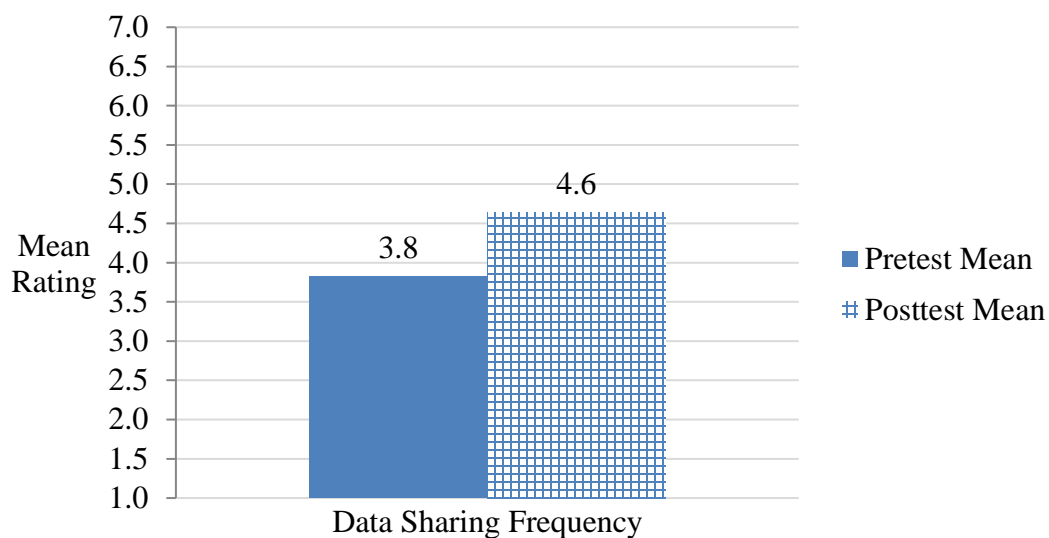


Figure 43. Participant average ratings for data sharing frequency items on the pretest and posttest administrations of the PBIS Data Use Survey. Possible responses ranged from one (annually) to seven (daily). A total of 11 respondents participated in each administration.

Table 33

Comparison of Means for Data Sharing Frequency

Outcome	M	SD	t-value	df
Pretest Data Sharing Frequency	3.82	1.66	-2.516*	10
Posttest Data Sharing Frequency	4.64	1.21		

* $p < .05$.

Qualitative Data Analysis

The survey instrument included two open-ended questions designed to elicit examples of data analyzed and shared by respondents. The first of these two questions asked respondents to provide an example of data they had recently analyzed. As part of their response, respondents were asked to explain the rationale selecting the data for analysis. All of the 11 respondents completed the pretest and posttest administrations of the PBIS Data Use Survey, including responding to the required open-ended question regarding examples of data that were recently analyzed (Figures 44 and 45) and data that were recently shared (Figures 46 and 47).

Pretest Response #	Examples of Data Analyzed
01	"Last data analyzed was ... math growth for the 2015-2016 school year. This data was analyzed to see the growth of students for the year and map growth was met or not met."
02	"Behavior and office referrals. This was analyzed to create behavior intervention plans."
03	No data example provided
04	"I recently accessed my current students Spring CAASP data, Spring MAP scores, and student CELDT scores. I analyzed the data to consider my students' strengths and areas of development. I also wanted to identify which students are second language learners and their English language proficiency levels. This information will help me when planning lessons for the start of the school year until more up to date data is available."
05	"I run data for students that have been referred by teachers for extra support on a monthly basis at our CARE team meetings."
06	"Test results for student grouping and lesson planning. Behavior contracts and discussion of meeting student needs. Grade level collaboration so everyone is on the same page."
07	"...scores in order to place students into reading intervention"
08	"...scores for student progress and growth"
09	No data example provided
10	"SBAC, MAP, 2015-2016 Discipline Data"
11	"Assessments"

Figure 44. Examples of student data analyzed provided in participants' responses on the pretest administration of the PBIS Data Use Survey.

Posttest Response #	Examples of Data Analyzed Provided by Participants
01	"Spring and Fall MAP scores, some SBAC scores from Illuminate, creating Illuminate reports of each grade level for overall RIT scores, Accelerated Reader information, Synergy incident reports"
02	"Office Referrals. This is done on a weekly basis."
03	"Beginning of the year assessments. Informal Basic Phonics Skills Test MAP Assessments Accelerated Reader Assessments. All data gives me an indication of whether they read during the summer, how much information they lost or retained over the summer, and where to start teaching them for the new school year. All valuable information for helping students to get off to the right start."
04	"MAP, AR, STAR, Lexia, Compass Learning, and CASSPP results to identify placement for small groups and mark progress."
05	No data example provided.
06	"Analyzed MAP scores to determine levels of students in ELA and Math. It also helped to see what specific areas need to be addressed as well as areas of strengths for students. Analyzed ELD records to determine which students are identified as EL and what their levels are Analyzed Accelerated Reader STAR test results to identify levels of students"
07	"We recently analyzed all of last year's data. I really needed to study it because last year we started Saturday School in lieu of suspensions on incidents that were not appropriate and we could have suspended them. We also used it for students that were extensively tardy. Looking at this data I can see that we had 58 kids who could have been suspended, but instead were assigned Saturday School. We are continuing this practice this year so I do want to see if it continues to make that big of a difference. I feel this data will continue to allow us to revisit the effectiveness of our programs."
08	"Physical Fitness Test results"
09	"Our fourth grade team went over current MAP test scores using District Data System. We used the information to set Smart Goals for our classes for next few months."
10	"I recently analyzed the school wide behavior and attendance data. This information is provided on a weekly basis, so that grade levels are able to collaborate on any behavior incidents and attendance concerns. As a grade level, we discuss possible resolutions to the problems and how we can support one another through our professional experiences and/or knowledge."
11	"Suspensions to monitor discipline for grade level. Tardies and absences to target issues at that grade level."

Figure 45. Examples of student data analyzed provided in participants' responses on the posttest administration of the PBIS Data Use Survey.

Pretest Response #	Examples of Data Shared Provided by Participants
01	"Shared map growth with team teacher on the 2015-2016 map growth."
02	No data example provided.
03	No data example provided.
04	"During PLC collaboration meetings, I share student data such as: CAASP, Accelerated Reader, and Common Formative Assessment Data in Math and ELA. This data is shared so that we collaborate on possible instructional strategies, curriculum, and behavior strategies that best meet the needs of our students."
05	"I shared survey data conducted through our PLUS program with our staff at the beginning and end of the year."
06	Grade level collaboration - planning how to best meet the needs of all students. Taking into account MAP scores to plan instruction. Using UOS results to plan how to best teach/revisit the teaching of priority standards while discussing with grade level the foundational standards that also need to be included in the lesson planning. Accelerated Reading test results (STAR) also help in planning students' fluency and comprehension abilities.
07	"Shared MAP scores with grade levels to collaborate and choose appropriate students for intervention"
08	No data example provided.
09	No data example provided.
10	"SBAC-CAASPP data, MAP, MPG, Discipline"
11	No data example provided.

Figure 46. Examples of student data shared provided in participants' responses on the pretest administration of the PBIS Data Use Survey.

Posttest Response #	Examples of Data Shared Provided by Participants
01	"MAP scores from fall 2016 to create reading intervention classes among each grade level"
02	No data example provided.
03	"Informal Basic Phonics Skills Assessments Psych. evaluations. At the beginning of every school year, the speech therapist and I (RSP) meet with teachers who have our students in their class for the year. We want them to know as much information about our students with IEP's and how they can accommodate them and modify their work so they can be more successful."
04	"In Collaboration to share results for platooning classes (ELD), future grade level behavior plan, planning UOS and lesson planning."
05	"The data about behavior and discipline was shared out and discussed at our first staff meeting of the year. The goal was to give the teachers as sense of the reality of our climate here at school and to encourage them to take proactive steps in the classroom to prevent the need to send students to the office. Teachers were also given access to the data to be reviewed at their grade level team meetings twice a month."
06	"Data was shared during collaboration grade level meetings. We discussed platooning levels ..."
07	"Last year's discipline data"
08	"Physical Fitness Tests to improve"
09	"Our fourth grade team went over current MAP test scores using District Data System. We used the information to set Smart Goals for our classes for next few months."
10	"Recently, I shared the school wide behavior and attendance data with my grade level colleagues. I also shared the MAP Test Data for my homeroom and period 2 class."
11	No data example provided.

Figure 47. Examples of student data shared provided in participants' responses on the posttest administration of the PBIS Data Use Survey.

Categories of analyzed data that emerged from responses included (a) academic, (b) behavior and discipline, (c) attendance, (d) physical fitness, and (e) general.

Summary

This chapter reported results of the quantitative and qualitative data analytical procedures applied in the current study. Descriptive statistics from the pretest and posttest administrations of the PBIS Data Use survey were reported accessibility to, usefulness of, and frequency of data analysis and sharing. The results of paired-sample *t* tests analysis were reported and significant increases in means from the pretest to the posttest administration of the survey were identified. Additionally, the results of open-ended survey questions explaining the identification of and rationale for analyzing and sharing data were reported.

CHAPTER 5: SUMMARY AND DISCUSSION

This study intended to determine how the use of student data could support a school personnel's implementation of a SWPBIS system. The various types of student data focused on in this study were behavior, attendance, and academic achievement. Measures on the accessibility, usefulness, and frequency with which data was analyzed and shared were taken. The researcher also measured the impacts of providing a student-data focused professional development training to school personnel by comparing their results from a pretest administration of the PBIS Data Use survey that was given approximately one month before a posttest administration of the same instrument. The results from multiple-choice and open-ended questions on both pretest and posttest administrations of the survey were used by to determine how student data was used to support the school's implementation of SWPBIS.

Summary of the Study

The following three research questions steered the design of this study:

1. To what extent did SWPBIS teams have access to student data that informed their decisions on how to facilitate students' development of behavioral skills that would help them be successful in school?
2. To what extent do SWPBIS teams perceive the usefulness of accessible data in the district's data system?
3. What impact did professional development have on SWPBIS team members' ability to access and use student data?
 - a. Were there increases in the team members' perception regarding data accessibility and usefulness from the pretest survey to the posttest survey, including in the frequency in which data were analyzed and shared?

- b. If there were increases in team members' data perceptions, were the increases significant?

Research Question One

To address research question one, descriptive statistics from participants' answers to PBIS Data Use Survey questions regarding accessibility to various types of student data were analyzed to determine the extent to which participants serving as SWPBIS team members had access to student data. Types of student data participants were queried about in regards to their accessibility were behavior (office discipline referrals, counseling incidents, and suspension incidents), attendance (student attendance and student tardiness), and student grades and achievement. Results from the pretest and posttest evidenced that there was variability in how participants perceived their access to student data within the district's data system.

The researcher observed that participants' ability to access student data were at varying levels from the administration of the pretest survey and that of the posttest survey. Rating the accessibility of various types of student data on a seven-point scale ranging from one – “not accessible” – to seven – “very easy to access” – the mean overall rating for accessibility of student behavior data was 2.6 at the time of the pretest survey. The mean rating for accessibility to the same data was 5.3 at the time of the posttest survey. There were differences in participants' pretest and posttest mean ratings of the accessibility of specific student behavior related-data indicators such as office discipline referrals, counseling incidents, and suspension incidents.

The researcher also observed that participants' ability to access student attendance data varied. Participants' mean ratings of the accessibility of overall student attendance data were approximately 4.0 at the time of the pretest and 6.3 at the time of the posttest. Similar variability

was reported by participants regarding the accessibility of student grades and achievement data. At the time of the pretest survey, participants reported a mean rating of approximately 4.3. The reported mean rating for accessibility to this same information was around 6.5 at the time of the posttest.

The researcher also observed that there was variation between the median ratings regarding accessing student behavior, attendance, and achievement information. The median ratings for pretest data accessibility fluctuated from very difficult and difficult to access to moderately difficult and slightly difficult to access. The related median rates for data accessibility from the posttest were more stable, ranging from easy to access to very easy to access. The researcher's review of participants' median behavior data accessibility responses from the pretest found that no less than half of the participants reported that office discipline referral information was difficult to access and that counseling and suspension incident information was very difficult to access. A review of participants' median responses regarding accessibility to behavior data from the posttest found that accessibility to all behavior-related data had improved and that the gap in accessibility between office discipline referral data and counseling and suspension incident data had been closed. At the posttest, at least half of the participants indicated that each of the student behavior data items was easy to access.

Upon reviewing participants' responses regarding the accessibility of attendance data from the pretest survey administration, the researcher found that 50% or more of the participants reported their access to student attendance data and student tardiness data was similar in that they were both moderately difficult to access. This equality of access was not reported by participants at the time of the posttest survey. On the posttest, at least half of the participants reported that student attendance data was very easy to access. Accessibility to student tardiness data was rated

as being easy to access on the posttest. Additionally, the researcher's review of the median student grade and achievement data accessibility ratings revealed these data were slightly difficult to access at the time of the pretest. At the time of the posttest, the median rating indicated that these data were easy to access for at least 50% of the participants.

Research Question Two

To address research question two, descriptive statistics from participants' answers on PBIS Data Use survey questions regarding usefulness to various types of student data were analyzed to determine the extent to which participants serving as SWPBIS team members perceived the usefulness of student data. Types of student data participants were queried about in regards to their usefulness were behavior (office discipline referrals, counseling incidents, and suspension incidents), attendance (student attendance and student tardiness), and student grades and achievement. Results from the pretest and posttest administrations of the survey indicated that there was variability in the perceived usefulness of student behavior, attendance, and achievement data.

The researcher observed that participants' ability to use student data were at varying levels from the administration of the pretest survey and of the posttest survey. Rating the usefulness of various types of student data on a seven-point scale ranging from one – “not useful at all” – to seven – “absolutely essential” – the mean overall rating regarding the usefulness of student behavior data was nearly 3.9 at the time of the pretest survey. The mean rating for usefulness to this information was around 5.9 at the time of the posttest survey. There were also differences in the pretest and posttest regarding how participants' perceived the usefulness of office discipline referrals, counseling incidents, and suspension incidents.

The researcher also observed variability in participants' perceived usefulness of student attendance information. Participants' mean ratings of the usefulness of overall student attendance data were approximately 4.1 at the time of the pretest and 5.9 at the time of the posttest. Similar variability was reported by participants regarding the usefulness of student grades and achievement data. At the time of the pretest survey, participants reported a mean rating of approximately 4.6. The reported mean rating for usefulness of this same information was around 6.6 at the time of the posttest.

The researcher also observed a general change in participants' perceptions regarding data usefulness from the administration of the pretest survey to the posttest survey based on participants' median ratings. Whereas the median rating of data usefulness ranged from moderately useful to useful at the pretest, this rating ranged between essential and absolutely essential on the posttest. The researcher's review of participants' median behavior data usefulness responses from the pretest found that at least 50% of the participants reported that office discipline referral and counseling incident information was moderately useful and that suspension incident information was useful. A review of participants' median responses regarding usefulness of behavior data from the posttest found that usefulness of all behavior-related data had improved and that the gap in usefulness between office discipline referral data and suspension incident data had been closed. At the posttest, at least half of the participants indicated that office discipline referral and suspension incident data were absolutely essential. Counseling incident data was rated as being essential by no less than half of the participants on the posttest survey.

Upon reviewing participants' median responses regarding the usefulness of attendance data from the pretest survey administration, the researcher found that 50% or more of the

participants reported their access to student attendance and student tardiness was similar in that they were both useful points of student data. This equality of utility was also reported by participants at the time of the posttest survey. On the posttest, at least half of the participants reported that both of these data points were essential. Also, the review of the median student grade and achievement data usefulness ratings revealed these data were useful at the time of the pretest. At the time of the posttest, the median rating indicated that these data were absolutely essential for at least 50% of the participants.

Research Question Three

To address research question three's focus on the impact of professional development, null hypotheses were developed regarding the impact of professional development on SWPBIS team members' ability to access and to use each of the following types of student data: office discipline referrals, counseling incidents, suspension incidents, student attendance, student tardiness, and student grade and achievement information. Each of the hypotheses was tested and a decision was reached to accept or reject them. The null hypothesis in each test stated that despite the provision of data-focused professional development between the pretest and posttest, there was not a significant difference in the mean ratings of the respective measurements:

- accessibility of office discipline referral data,
- accessibility of counseling incident data,
- accessibility of suspension incident data,
- accessibility of student attendance data,
- accessibility of student tardiness data,
- accessibility of student grade and achievement data,
- usefulness of office discipline referral data,

- usefulness of counseling incident data,
- usefulness of suspension incident data,
- usefulness of student attendance data,
- usefulness of student tardiness data, and
- usefulness of student grade and achievement data.

A paired-samples *t*-test was used to test the data collected from the two surveys for each of the respective measurements above. For each of the above measurements, the results of administering the one-tailed paired-samples *t*-test prompted the decision to reject the null hypothesis. Providing participants data-focused professional development appeared to be associated with substantive increases in their ability to access various information in the district's data system, including student data regarding office discipline referrals, counseling incidents, suspension incidents, attendance, tardiness, and grade and achievement. The professional development that was provided was also associated with significant increases in the usefulness of each of the above accessible data sources.

Also, a null hypothesis was developed regarding the impact of professional development on SWPBIS team members' frequency of data analysis. The hypothesis was tested and a decision was reached to accept or reject the hypothesis. The null hypothesis in this test stated that there was not a significant difference in the mean data analysis ratings between the pretest and posttest, despite the provision of data-focused professional development between the administrations of both surveys. A paired-samples *t*-test was used to test the data collected from the two surveys. The results of administering the one-tailed paired-samples *t*-test prompted the decision to accept the null hypothesis. While participants' mean rating for their frequency in

analyzing student data indicated a modest increase – from 4.8 to 5.0 – the positive change was not significant.

A final null hypothesis was developed regarding the impact of professional development on SWPBIS team members' frequency of data sharing. The hypothesis was tested and a decision was reached to accept or reject the hypothesis. The null hypothesis in this test stated that there was not a significant difference in the mean data sharing ratings between the pretest and posttest, despite the provision of data-focused professional development between the administrations of both surveys. A paired-samples *t*-test was used to test the data collected from the two surveys. The results of administering the one-tailed paired-samples *t*-test prompted the decision to reject the null hypothesis. The significant increases observed in the participants' perceived accessibility and usefulness of data after the researcher-provided professional development demonstrated that similar training efforts can be effective for increasing the data proficiency of school personnel.

Implications for Practice

The researcher believes there are various implications of the current research study. The results and summary of the findings contained therein (a) support the emphasis of data use to implement SWPBIS, (b) highlights benefits of data use on implementation efforts, (c) confirms the utility of technology systems for vast amounts of data, and (d) verifies the impacts of training on data accessibility and use within schools. Each of these points, which helped to comprise the theoretical foundation of the current study, are expounded upon below.

As Lewis et al. (2010) found in their earlier research, the researcher found that SWPBIS implementation requires emphasis on data to guide decisions by school personnel of the supports needed to facilitate student success. An essential part of this emphasis includes school personnel

developing a fluency of available data to assist them as they engage in basic problem-solving. While it was previously observed that an increase in the accessibility of and fluency with data were associated with increased reliance on data to facilitate school-wide behavior management (Lewis et al, 2010), findings from this research study provided additional evidence of this finding. As participants perceived an increase in the accessibility and usability of data, there was an increase in their usage of this information to increase student positive behavior, attendance, and achievement. Participants were more readily able to detail ways in which data would be used to strengthen the implementation efforts as their data-related knowledge-base grew. Additionally, specific new ways of using data included assessing the impact of school-wide alternative disciplinary initiatives and developing resolutions to undesirable trends across and within grade levels.

Similar to the research of Coffey and Horner (2012), the current study found that school personnel who use data to plan and make adjustments to their initiative improve the likelihood of a continued implementation of school-wide behavior management. The participating school's increased access and use of data was positively associated with an increase in the overall increase of the teams' commitment to share data with other school staff more frequently as part of the implementation effort. Participants' comments provided anecdotal evidence of their plan to sustain and expand the execution of the initiative. Regarding the intent to use data to sure up the SWPBIS implementation, one participant shared the following in their response on the posttest administration of the PBIS Data Use Survey:

“My current plan is to incorporate these tools when our team meets monthly to discuss students that may need more services. Additionally, as the school counselor, I intend to

use the data to specifically target certain grade levels for attendance concerns and behavior concerns.”

Comments by participants evidenced an increase in how data would be used to facilitate improvements in students’ social skills in addition to their academic skills. For example, near the end of the study, participants noted that the use of behavior and attendance data would help in understanding more about their school climate. One participant responded that, after learning how to interact with the data reports, they were now monitoring office discipline referral data weekly. Another participant expanded on this intent to use data more deeply implement SWPBIS. In addition to analyzing behavior and attendance data weekly, the participant indicated that the information is used by grade levels to “collaborate on any behavior incidents and attendance concerns.” Participants shared that, at their grade levels, discussions are now held about possible resolutions to problem student behavior in a way that supports one another. They also shared that, going forward, these types of data would help inform the development of behavior plans and improve classroom management efforts – both of which are important to the sustainment of SWPBIS (Stormont et al., 2006).

There was also an implication as to the accessibility of data to classroom teachers—who comprised more than half of the participants in this current study. During the training, participating teachers quickly learned how to access the above customized reports in the district’s data system because of the brevity of the process between logging into the system and retrieving the information. Once these SWPBIS team members entered their system login credentials, they were able to access the list of data reports within a few steps. Access to the data reports was also facilitated by the system’s automated password recovery system for users who may have misplaced or forgot their login credentials. Using their district-provided email

addresses, a couple of participants were able to retrieve their forgotten passwords within a one-minute turnaround time.

Despite the demonstrated ease of accessing the reports, participants reported that they would likely only retrieve and analyze the information monthly – to coincide with their monthly SWPBIS team meeting – if they had to take the time to generate the reports in the system. Although they recognized that it would be ideal for them to review data, especially those pertaining to student behavior, more frequently, the participants indicated that greater frequency of data analysis and use would likely be precipitated by electronic delivery of the reports via email. To facilitate more frequent review of school-wide behavior, attendance, and achievement information, the researcher agreed that data reports would be sent to the site administrators weekly for them to further disseminate to the rest of the SWPBIS team members.

An implication of the current study has to do with the use of technology-based data systems to warehouse student data (Wayman & Cho, 2008) and the necessity of training school personnel on how to interact with data reports to (McKevitt & Braaksma, 2004) improve their ability to access and use data in their decision-making processes (Lewis et al., 2010). In the present study, the statistically significant increases in the participants' perceptions of data accessibility, usefulness, and sharing frequency were evidenced after the completion of a focused, explicit training on accessing and using data reports contained within the district's data system. While strategies for sharing the data were not explicitly discussed during the training, the researcher modeled sharing reports from the district's data system with the participants.

As McKevitt and Braaksma (2004) found, training school personnel to implement relevant strategies, including how to use data, is one of the foundational aspects of implementing behavior management in schools. The researchers observed that using an external individual

who possessed advanced training in the subject matter to train school personnel could be helpful in implementation efforts around SWPBIS. The current study's use of a district-level researcher with more than a decade in educational measurement and psychometric training and experience underscores this finding. As a data expert familiar with the needs of the school personnel, the current researcher was able to develop a training module that efficiently addressed their knowledge gaps (see Appendix C).

The most germane implication of the study is that when school personnel are supported in their acquisition of their skills to access and use data to facilitate improved student behavior, these personnel will respond positively when they make a connection with their own data fluency and their effectiveness as educators. The researcher recognizes that those who choose to become professional educators undertake this calling to positively affect the lives of their students and the communities in which they serve. The researcher believes that the ability to access and use data to identify the needs of their students and communities is desired by all educators. Training educators on how to efficiently and effectively retrieve and interface with student data appears to produce more immediate impacts because this activity meets the educator's need to be informed and improve the effectiveness of their classrooms and their schools.

The importance of supporting acquisition of data literacy of school personnel in the current study was apparent to the researcher in the review of participants' responses to PBIS Data Use survey items concerning types of data that were analyzed and shared. Categories of analyzed data that emerged from responses included (a) academic, (b) behavior and discipline, (c) attendance, (d) physical fitness, and (e) general.

On the pretest administration of the survey, seven of the 11 responses indicated that academic data had or would be the focus of their data analysis efforts. The focus of respondents'

most recent analytical efforts were on student growth and achievement on formative, benchmark, and summative assessments in the academic domains of reading, English language development, English language arts, and math. Several respondents indicated the importance of analyzing and using academic data to ensure students receive proper placement in courses and needed academic interventions. Three of the 11 responses highlighted the analyzing behavior and discipline data to assess behavior trends in prior school years and assist in the development of school-wide behavior policies and individual student behavior contracts. Three of the 11 responses did not provide any specific example of data that had or would be analyzed.

On the posttest administration of the survey, five of the 11 responses indicated that academic data had or would be the focus of data analysis efforts. While student progress in core areas such as reading and math remained the focus of academic data analytic efforts, primary vehicles for analyzing this information were focused on formative and benchmark data within the district's data system rather than summative assessment data. There was an increase from the pretest to the posttest surveys in the number of responses that emphasized the analysis of behavior and discipline data.

Five of the 11 respondents on the posttest highlighted behavior and discipline data as part of their current data analysis efforts. Behavior and discipline data review efforts were focused on (a) analyzing school-wide results from the prior year, (b) identifying and monitoring the causes for office discipline referrals, (c) determining the impact of disciplinary measures designed to keep students in the instructional environment, and (b) problem solving for grade level behavior trends. Two of the respondents reported that student attendance data such as absenteeism and tardiness were the focus of some of their most recent data analysis. Seeking to target issues at specific grade levels, these data were reviewed collaboratively to identify

possible resolutions and possible ways that staff could provide mutual support in addressing attendance concerns. One of the 11 respondents reported that they recently analyzed students' physical fitness data. This information was included in the district's data system, although accessing and analyzing this information was not a focus of this current study. One of the 11 responses did not provide any specific example of data that had or would be shared out.

The second open-ended question asked respondent to provide an example of data they had recently shared, including providing explanation of this data was chosen to be shared. All 11 of the respondents addressed the required open-ended question from the pretest and posttest surveys regarding examples of data that were recently shared. Categories of shared data that emerged from responses included (a) academic, (b) behavior and discipline, (c) physical fitness, and (d) general.

On the pretest administration of the survey, six of the 11 responses indicated that academic data had or would be the focus of data sharing efforts. Student progress and performance in reading, English language arts, and math were emphasized on several occasions. Particular emphasis was placed on sharing achievement data, as measured by formative assessments, district benchmarks, and state summative assessments as part of their school-wide and grade level collaboration efforts. Two of the 11 responses highlighted the sharing of behavior and discipline data as a priority, including dissemination of information to staff at the beginning and end of the school year. Four of the 11 responses did not provide any specific example of data that had or would be shared out.

On the posttest administration of the survey, five of the 11 responses indicated that academic data had or would be the focus of data sharing efforts. Student academic progress and achievement in reading, English language arts, and math were still the academic areas of focus.

Similar to the pretest, respondents' academic data sharing efforts largely consisted of disseminating formative assessment, district benchmark, and state summative assessment results. There was an increase from the pretest to the posttest surveys in the number of responses that emphasized the sharing of behavior and discipline data. Five of the 11 respondents on the posttest highlighted behavior and discipline data as part of the past, current, and/or future data sharing efforts. Respondents reported that behavior and attendance data would be helpful in (a) gaining a better understanding of their school climate, (b) informing the development of behavior plans, and (c) improving classroom management efforts. One of the 11 respondents reported that students' physical fitness data, which was not a focus of this current study, would be shared out. Three of the 11 responses did not provide any specific example of data that had or would be shared out.

The researcher sought to collect additional data from participants approximately six weeks after the conclusion of the posttest survey. The researcher asked all of the participants to share if and how they are using student behavior, attendance, and achievement data reports approximately two months after their data-focused professional development. Several participants responded and provided information on if and how student data were explicitly being incorporated into their ongoing SWPBIS implementation efforts.

The responding participants indicated that the review of behavior, attendance, and achievement data reports were now incorporated into their monthly SWPBIS team meetings. By formalizing the review of data on a regular basis, this practice is becoming engrained in the culture and facilitates sustainability. Efforts to ground the use of data into the culture are also boosted when the data are viewed as facilitating the work of the team.

For example, the school's leadership has now decided to provide employ alternative discipline measures in-lieu of suspensions. In addition to using the data to make school-wide decisions, grade level teams were also using the reports to facilitate grade level goal setting and monitoring. Case in point, one grade level team is using student behavior data to focus on the development of behavior-related goals for all students. Other grade level teams are using the data as a catalyst to develop peer mentoring opportunities between students and promote student club participation as a way to decreases problem behaviors and increase student attendance.

The use of student data is beginning to permeate the implementation of school-wide behavior management processes. As one participant shared, "Our PBIS team is looking at ways to bring this information to the whole staff in a manner that will be positive in approach, yet create long lasting results that cut down discipline issues and office referrals." The experiences shared by participants are consistent with one of the truisms that the researcher has become acquainted with over the years. Teachers are not moved by research and would could happen; they are moved by the reality and what they are able to see happen.

Recommendations for Further Research

The current study was focused on the role of data in implementation SWPBIS in a large, but singular elementary school in a northern California school district. Because the school's entire leadership team responsible for implementing and monitoring the system of school-wide behavior management participated in this study, the researcher believes that the findings are a valuable contribution to research PBIS implementation research. However, the researcher believes that it is possible that stronger findings could have been produced if the study was not limited to one school.

Therefore, the researcher recommends that the methods and procedures employed in the current study be expanded to a similarly focused study on SWPBIS implementation for an entire school district. Additionally, the researcher believes that the expanded study should include a series of trainings focused specifically on analyzing student-related data for explicit purposes and actions. Upon replication of this study, the researcher plans to include representation from the non-classroom, classified staff along with the certificated classes of staff in the current study. The inclusion of non-teaching, hourly staff in accessing and analyzing basic student data can be helpful at enlisting their support in SWPBIS implementation.

In accordance with accepted research (Coffey & Horner, 2012), the researcher focused the current study school personnel responsible for leading the school's change effort regarding how the adults in the school manage student behavior. As part of the current study, recognized leaders among the school staff were trained to improve their ability to access, use, analyze, and share data. The scope of current research study did not include an evaluation of the effectiveness of participants' data analysis and sharing activities. The researcher recommends that the effectiveness of school personnel's analysis and sharing of data be studied as measured by the reduction of student office discipline referrals and suspensions from instruction.

As an experienced educational administrator, the researcher has extensive experience in leading and participating in communities of professional learning. These learning communities are often focused on changing adult behavior to positively impact students' development of academic skill on a school-wide basis. Both academic-focused teams and SWPBIS teams consist of school personnel collaborating to improve student outcomes. Additional research into the possibility of combining the work of academic-focused learning communities and behavior-

focused initiatives like SWPBIS could yield additional benefits to educators and the students and families that they serve.

Conclusion

This study was undertaken to address the variability that exists between the vast amounts of data collected and actually used in schools to facilitate SWPBIS implementation. The accessibility of and usefulness of student behavior, attendance, and achievement data were assessed. Both data accessibility and usefulness were initially found to be barriers to facilitating data-informed implementation based on their low ratings. This finding was consistent with the previous research of Means et al. (2009). Data-focused professional development provided by the researcher narrowed the data accessibility and usefulness gaps for participants, resulting in a decreased variability between the availability of data in the district's data system and data that are accessed and used. Gains were evident across all of the metrics related to the access and use of student data included in this study, and significant increases were evident across all metrics save in the frequency in which data are analyzed.

The current research confirmed the importance of the role of data in SWPBIS implementation, especially in relation to the accessibility, use, analysis, and sharing of information by school personnel. As school personnel are trained on how to retrieve, employ, and disseminate data, their proficiency, the current study found that their proficiency in accessing, using, and sharing data significantly increased. As demonstrated in participants' responses to open-ended items in the present study's pre- and post- surveys, school personnel's decisions to mobilize data in the planning and monitoring SWPBIS efforts increase when their proficiency with interacting with the data increases.

Summary

In this chapter, a summary of the findings were presented. Findings regarding each of the three research questions were discussed, including the decision to accept or reject the null hypothesis associated with each research question. Implications for practice were also discussed for the findings in relation to research that comprised the theoretical foundation for the present study. Recommendations for further research were provided by the researcher with an eye toward building upon the current study's findings. Finally, the conclusion to the present research study was discussed.

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APPENDIX A

PBIS Data Use Survey – First Week of August

PBIS Data Use Survey - Aug. 2016**1. Instructions**

The study in which you are being asked to participate is designed to investigate the use of data to implement school-wide positive behavior interventions and supports (SWPBIS) in a large elementary school in a Northern California school district. This study is being conducted by Edward Eldridge under the supervision of Belinda Karge, Ph.D., Professor, Doctoral Programs. This study has been approved by the Institutional Review Board, Concordia University Irvine, in Irvine, CA.

PURPOSE: School personnel in elementary schools have varying levels of skill in using data and information system resources that facilitate data collection and analysis, and data-informed decision-making. Yet, the research indicates that schools seeking to successfully implement a system-wide behavior support plan must be able to effectively identify, collect, and analyze data. The purpose of the present study is to resolve the variability of data collection and analysis for SWPBIS implementation as the successfulness of this approach is dependent upon on a guiding team of educators who use data to make program decisions.

DESCRIPTION: This study will compare the responses of an SWPBIS school leadership team on surveys about their use of data and measure the impact of providing data system training on their data-use habits. The study will also examine the role of accessing and using data as part of a SWPBIS implementation effort within a large elementary school in Northern California.

PARTICIPATION: Participation in this study is voluntary, and refusal to participate will not involve any penalty or loss of benefits to which the subject is otherwise entitled to receive. The subject may discontinue participation, at any time, without penalty or loss of benefits to which the subject is otherwise entitled.

ANONYMITY: Information will be collected from subjects via surveys hosted on SurveyMonkey's research platform. The investigator will ensure anonymity by enabling SSL encryption that protects data as it moves between the subject's computer and SurveyMonkey servers. Additionally, the survey instruments will not track the IP addresses of subject's computers, adding a dual layer of protection to ensure anonymity.

2016 (Pretest Survey)

DURATION: Subjects are requested to participate a total of five months, from July 2016 through November 2016.

RISKS: There are no foreseeable risks to subject participating in this study.

BENEFITS: Subjects participating in this study will receive training on accessing and using data which could be used to improve their implementation of SWPBIS.

CONTACT: If you have additional questions about this research, your rights as a research subject, or a research-related injury you have experienced, please contact Belinda Karge, Ph.D., Professor, Doctoral Programs at phone (949) 214-3333 or email belinda.karge@cui.edu.

RESULTS: At the conclusion of this study, a copy of the results will be available at Concordia University Irvine, Irvine, CA.

*** 1. CONFIRMATION STATEMENT:**

- ☐ I have read the information above, and I agree to participate in your study.
- ☐ I have read the information above, and I DO NOT agree to participate in your study.

- * 2. Access to Data in District Data System - Please indicate the level of access you have to your current students' data in the district's data system.

	1- not accessible	2-very difficult to access	3- difficult to access	4- moderately difficult to access	5- slightly difficult to access	6-easy to access	7-very easy to access
Office discipline referrals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suspension incidents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Counseling incidents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student attendance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student tardiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student grades / achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- * 3. Usefulness of Accessible Data in District Data System - Please indicate how useful student data in the district's data system is to you.

	1-not useful at all	2-slightly useful	3-moderately useful	4-useful	5-very useful	6-essential	7- absolutely essential
Office discipline referrals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suspension incidents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Counseling incidents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student attendance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student tardiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student grades / achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- * 4. Frequency of Analysis of Data in District Data System - Please indicate the option below which best matches your actual frequency in analyzing student data.

☐ 1 - Annually ☐ 2 - At each semester ☐ 3 - Quarterly ☐ 4 - Monthly ☐ 5 - Bi-weekly ☐ 6 - Weekly ☐ 7 - Daily

- * 5. Please provide an example of data that you have recently analyzed. Why were these data analyzed?

- * 6. Frequency of Sharing of Data in District Data System - Please indicate the option below which best matches your actual frequency in sharing student data with other members of the school staff.

☐ 1 - Annually ☐ 2 - At each semester ☐ 3 - Quarterly ☐ 4 - Monthly ☐ 5 - Bi-weekly ☐ 6 - Weekly ☐ 7 - Daily

- * 7. Please provide an example of data that you shared with other school staff. Why were these data shared?

- * 8. Please indicate your position at the school.

<input type="radio"/> Certificated – K-3 Teacher	<input type="radio"/> Certificated – Special Education
<input type="radio"/> Certificated – 4-6 Teacher	<input type="radio"/> Classified – Office Staff
<input type="radio"/> Certificated – 7-8 Teacher	<input type="radio"/> Classified – Other Staff
<input type="radio"/> Certificated – Counselor	<input type="radio"/> Administrator

* 9. Please indicate the number of years you have held this position in your current school.

- | | |
|--|--|
| <input type="radio"/> Less than 2 years | <input type="radio"/> 10 years to less than 15 years |
| <input type="radio"/> 2 years to less than 5 years | <input type="radio"/> 15 or more years |
| <input type="radio"/> 5 year to less than 10 years | |

10. Please indicate your gender.

- | | |
|------------------------------|---|
| <input type="radio"/> Female | <input type="radio"/> Prefer not to respond |
| <input type="radio"/> Male | |

11. Please indicate your ethnicity / race.

- | | |
|---|---|
| <input type="radio"/> American Indian / Alaska Native | <input type="radio"/> Pacific Islander or Native Hawaiian |
| <input type="radio"/> Asian | <input type="radio"/> White |
| <input type="radio"/> Black or African American | <input type="radio"/> Two or More |
| <input type="radio"/> Filipino | <input type="radio"/> Prefer not to respond |
| <input type="radio"/> Hispanic | |

APPENDIX B

PBIS Data Use Survey – First Week of September 2016 (Posttest Survey)

PBIS Data Use Survey - Sept. 2016**1. Instructions**

The study in which you are being asked to participate is designed to investigate the use of data to implement school-wide positive behavior interventions and supports (SWPBIS) in a large elementary school in a Northern California school district. This study is being conducted by Edward Eldridge under the supervision of Belinda Karge, Ph.D., Professor, Doctoral Programs. This study has been approved by the Institutional Review Board, Concordia University Irvine, in Irvine, CA.

PURPOSE: School personnel in elementary schools have varying levels of skill in using data and information system resources that facilitate data collection and analysis, and data-informed decision-making. Yet, the research indicates that schools seeking to successfully implement a system-wide behavior support plan must be able to effectively identify, collect, and analyze data. The purpose of the present study is to resolve the variability of data collection and analysis for SWPBIS implementation as the successfulness of this approach is dependent upon on a guiding team of educators who use data to make program decisions.

DESCRIPTION: This study will compare the responses of an SWPBIS school leadership team on surveys about their use of data and measure the impact of providing data system training on their data-use habits. The study will also examine the role of accessing and using data as part of a SWPBIS implementation effort within a large elementary school in Northern California.

PARTICIPATION: Participation in this study is voluntary, and refusal to participate will not involve any penalty or loss of benefits to which the subject is otherwise entitled to receive. The subject may discontinue participation, at any time, without penalty or loss of benefits to which the subject is otherwise entitled.

ANONYMITY: Information will be collected from subjects via surveys hosted on SurveyMonkey's research platform. The investigator will ensure anonymity by enabling SSL encryption that protects data as it moves between the subject's computer and SurveyMonkey servers. Additionally, the survey instruments will not track the IP addresses of subject's computers, adding a dual layer of protection to ensure anonymity.

DURATION: Subjects are requested to participate a total of five months, from July 2016 through November 2016.

RISKS: There are no foreseeable risks to subject participating in this study.

BENEFITS: Subjects participating in this study will receive training on accessing and using data which could be used to improve their implementation of SWPBIS.

CONTACT: If you have additional questions about this research, your rights as a research subject, or a research-related injury you have experienced, please contact Belinda Karge, Ph.D., Professor, Doctoral Programs at phone (949) 214-3333 or email belinda.karge@uci.edu.

RESULTS: At the conclusion of this study, a copy of the results will be available at Concordia University Irvine, Irvine, CA.

*** 1. CONFIRMATION STATEMENT:**

- ☐ I have read the information above, and I agree to participate in your study.
- ☐ I have read the information above, and I DO NOT agree to participate in your study.

- * 2. Access to Data in District Data System - Please indicate the level of access you have to your current students' data in the district's data system.

	1- not accessible	2-very difficult to access	3- difficult to access	4- moderately difficult to access	5- slightly difficult to access	6-easy to access	7-very easy to access
Office discipline referrals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suspension incidents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Counseling incidents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student attendance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student tardiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student grades / achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- * 3. Usefulness of Accessible Data in District Data System - Please indicate how useful student data in the district's data system is to you.

	1-not useful at all	2-slightly useful	3-moderately useful	4-useful	5-very useful	6-essential	7- absolutely essential
Office discipline referrals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suspension incidents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Counseling incidents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student attendance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student tardiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student grades / achievement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- * 4. Frequency of Analysis of Data in District Data System - Please indicate the option below which best matches your actual frequency in analyzing student data.

☐ 1 - Annually ☐ 2 - At each semester ☐ 3 - Quarterly ☐ 4 - Monthly ☐ 5 - Bi-weekly ☐ 6 - Weekly ☐ 7 - Daily

- * 5. Please provide an example of data that you have recently analyzed. Why were these data analyzed?



- * 6. Frequency of Sharing of Data in District Data System - Please indicate the option below which best matches your actual frequency in sharing student data with other members of the school staff.

☐ 1 - Annually ☐ 2 - At each semester ☐ 3 - Quarterly ☐ 4 - Monthly ☐ 5 - Bi-weekly ☐ 6 - Weekly ☐ 7 - Daily

- * 7. Please provide an example of data that you shared with other school staff. Why were these data shared?



- * 8. Please indicate your position at the school.

<input type="radio"/> Certificated – K-3 Teacher	<input type="radio"/> Certificated – Special Education
<input type="radio"/> Certificated – 4-6 Teacher	<input type="radio"/> Classified – Office Staff
<input type="radio"/> Certificated – 7-8 Teacher	<input type="radio"/> Classified – Other Staff
<input type="radio"/> Certificated – Counselor	<input type="radio"/> Administrator

* 9. Please indicate the number of years you have held this position in your current school.

- | | |
|--|--|
| <input type="radio"/> Less than 2 years | <input type="radio"/> 10 years to less than 15 years |
| <input type="radio"/> 2 years to less than 5 years | <input type="radio"/> 15 or more years |
| <input type="radio"/> 5 year to less than 10 years | |

10. Please indicate your gender.

- | | |
|------------------------------|---|
| <input type="radio"/> Female | <input type="radio"/> Prefer not to respond |
| <input type="radio"/> Male | |

11. Please indicate your ethnicity / race.

- | | |
|---|---|
| <input type="radio"/> American Indian / Alaska Native | <input type="radio"/> Pacific Islander or Native Hawaiian |
| <input type="radio"/> Asian | <input type="radio"/> White |
| <input type="radio"/> Black or African American | <input type="radio"/> Two or More |
| <input type="radio"/> Filipino | <input type="radio"/> Prefer not to respond |
| <input type="radio"/> Hispanic | |

APPENDIX C

SWPBIS Report Training Agenda and Presentation

These are copies of the exact slides from the presentation.

SWPBIS Report Training August 15, 2016

Prepared by
Edward Eldridge, Doctoral Candidate, Concordia University
Irvine

Training Agenda

Topic	Estimated Time
SWPBIS Report Training Agenda	3-5 minutes
Introduction of Trainer	3-5 minutes
What Research Says About Data Use	3-5 minutes
Expected Training Outcomes	3-5 minutes
Nominal Grouping of Participants	1-2 minutes
Introduction of SWPBIS Data Reports in Illuminate – Behavior, Attendance, and Achievement Reports	5-8 minutes
Behavior Data Reports Description and Exercise	30-40 minutes
Attendance Data Reports Description and Exercise	20-30 minutes
Achievement Data Reports	10-20 minutes

2

Introduction of Trainer – 3-5 min

- Career Educational Researcher and Strategic Innovator
- Expertise is in data information systems and analysis
- Areas of extensive experience
 - Innovation and Strategic Planning
 - Student and data management systems
 - School-based data technical assistance

3

What the Research Says About Data Use – 3-5 min

- Practical, summary data can help facilitate successful SWPBIS implementation
- Review of office discipline referral information is an essential and formative activity for implementation
- Data literacy is often a barrier that infringes upon the effective use of data
- Data literacy is helped by employing user-friendly information systems, and training on how to access and analyze data

Expected Training Outcomes – 3-5 min

- SWPBIS team members will
 - Receive copies of and online to access behavior, attendance, and achievement data reports
 - Develop proficiency in analyzing data reports to assess the school-wide social and academic needs of students
 - Practice reading data reports and sharing out data points to other school personnel

Nominal Groups – 1-2 min

- Let's divide into 3 groups
 - 1s
 - 2s
 - 3s
- Grouping
 - Count off by 1-2-3, 1-2-3, etc...

Introduction of SWPBIS Data Reports in Illuminate – 5-8 min

Behavior Data Reports

- 1516 Behavior - Discipline Referrals by Consequence
- 1516 Behavior - Suspensions by Behavior Violation
- 1516 Behavior - Violations by Grade Level

Attendance Data Reports

- 1516 Attendance - Percent Present
- 1516 Attendance - Percent Tardy

Achievement Data Reports

- 1516 Achievement - MAP by Average Percentile Rank

**Reports are accessible in the SWPBIS Reports
collection Illuminate!**

7

Behavior Data Reports

8

Overview of Data Reports - [1516 Behavior - Discipline Referrals by Consequence](#)

Report updated nightly in Illuminate!

Consequence Type	Count of Consequences
Class Suspension	55
Counseled and Warned	50
Detention	30
In-School Suspension	24
Loss of Privileges	80
Parent Conference	12
Referral for Counseling	8
Restitution	1
Suspension	74
Weekend School	58
Work Detail	4

When discipline referrals are issued, what consequences are imposed upon students?

How often are students removed or suspended from regular instruction?

Overview of Data Reports

1516 Behavior - Suspensions by Behavior Violation

Report updated nightly in Illuminate!

Primary Violation	Count of Consequences
Caused, attempted to cause, or threatened serious physical injury	34
Committed an obscene act or engaged in habitual profanity or vulgarity	8
Disrupted school activities or willfully defied the valid authority of school personnel	53
Engaged in sexual harassment (Grades 4-12 only)	5
Engaged in the act of bullying.	9
Harassment, threats, or intimidation-creating a hostile environment (Grades 4-12 only)	5
Possession of knife, explosive or other dangerous object	2
Stole or attempted to steal school property or private property	9
Unlawful possession of any controlled substance (not including alcohol and except for the first offense for 1 possession of not more than an ounce of marijuana)	1
Willfully used force or violence except in self-defense	27

Why are students suspended from regular instruction? What are the behavior violations typically cited on discipline referrals?

Overview of Data Reports - [1516 Behavior - Violations by Grade Level](#)

Report updated nightly in Illuminate!

Primary Violation	15-16 Grade Level	Count of Consequences
Caused, attempted to cause, or threatened serious physical injury	3	2
Caused, attempted to cause, or threatened serious physical injury	4	16
Caused, attempted to cause, or threatened serious physical injury	5	11
Caused, attempted to cause, or threatened serious physical injury	6	3
Caused, attempted to cause, or threatened serious physical injury	7	10
Caused, attempted to cause, or threatened serious physical injury	8	9
Committed an obscene act or engaged in habitual profanity or vulgarity	3	2
Committed an obscene act or engaged in habitual profanity or vulgarity	5	3
Committed an obscene act or engaged in habitual profanity or vulgarity	7	4
Committed an obscene act or engaged in habitual profanity or vulgarity	8	2
Disrupted school activities or willfully defied the valid authority of school personnel	3	1
Disrupted school activities or willfully defied the valid authority of school personnel	4	8
Disrupted school activities or willfully defied the valid authority of school personnel	5	5
Disrupted school activities or willfully defied the valid authority of school personnel	6	10
Disrupted school activities or willfully defied the valid authority of school personnel	7	15
Disrupted school activities or willfully defied the valid authority of school personnel	8	15
Engaged in sexual harassment (Grades 4-12 only)	5	4
Engaged in sexual harassment (Grades 4-12 only)	6	1
Engaged in sexual harassment (Grades 4-12 only)	7	2
Engaged in sexual harassment (Grades 4-12 only)	8	1
Engaged in the act of bullying.	3	1
Engaged in the act of bullying.	5	2
Engaged in the act of bullying.	6	1
Engaged in the act of bullying.	7	3
Engaged in the act of bullying.	8	2

At which grade levels does it appear that students engage in different types of problem behavior?

Overview of Data Reports - [1516 Behavior - Violations by Grade Level](#)

Report updated nightly in Illuminate!

Primary Violation	15-16 Grade Level	Count of Consequences
Harassment, threats, or intimidation-creating a hostile environment (Grades 4-12 only)	6	3
Harassment, threats, or intimidation-creating a hostile environment (Grades 4-12 only)	7	3
Possession of knife, explosive or other dangerous object	7	1
Possession of knife, explosive or other dangerous object	8	1
Stole or attempted to steal school property or private property	3	2
Stole or attempted to steal school property or private property	4	2
Stole or attempted to steal school property or private property	5	2
Stole or attempted to steal school property or private property	6	2
Stole or attempted to steal school property or private property	7	1
Unlawful possession of any controlled substance (not including alcohol and except for the first offense for possession of not more than an ounce of marijuana)	7	1
Willfully used force or violence except in self-defense	3	2
Willfully used force or violence except in self-defense	4	11
Willfully used force or violence except in self-defense	5	13
Willfully used force or violence except in self-defense	6	2
Willfully used force or violence except in self-defense	7	3
Willfully used force or violence except in self-defense	8	1

At which grade levels does it appear that students engage in different types of problem behavior?

A Behavior Data Analysis Exercise – 30 min
(Participants will be split into small groups of 3-5 people)

1. Of all the office discipline referrals issued by school staff, how many consisted of a suspension from class, in-school, or off-campus?
 - [1516 Behavior - Discipline Referrals by Consequence](#)

2. For which behavior violation(s) did school staff issue the most suspensions?
 - [1516 Behavior - Suspensions by Behavior Violation](#)

3. At which grade levels do the above violations most frequently occur?
 - [1516 Behavior - Violations by Grade Level](#)

A Behavior Data Analysis Exercise – continued

4. What interventions and supports will be used to decrease these targeted behavior violations and increase positive student behavior?
5. When will students' data be reviewed to determine how the interventions are impacting students' behavior?
6. Please take two minutes to debrief within your groups, and then select one member to recap your group's comments with the whole group.
7. Questions for the presenter.

Attendance Data Reports

Overview of Data Reports - [1516 Attendance - Percent Present](#)

Report updated nightly in Illuminate!

15-16 Grade Level	Count of Students	Percent Present
1	95	0.966
2	97	0.966
3	126	0.976
4	130	0.963
5	140	0.971
6	128	0.972
7	98	0.966
8	117	0.964
K	114	1.000

At which grade levels that students are least successful in attaining regular attendance in school?

Percentages are displayed as decimals (i.e. 0.964 = 96.4%)

Overview of Data Reports - [1516 Attendance - Percent Tardy](#)

Report updated nightly in Illuminate!

15-16 Grade Level	Count of Students	Percent Tardy
1	52	0.016
2	63	0.028
3	73	0.023
4	72	0.020
5	86	0.027
6	82	0.032
7	57	0.006
8	83	0.006

At which grade levels do students have the most difficulty in getting to class on time?

Percentages are displayed as decimals (i.e. 0.027 = 2.7%)

An Attendance Data Analysis Exercise – 20 min
(Participants will be split into small groups of 3-5 people)

1. At which grade levels were the highest / lowest attendance rates based on students' percent present?
 - [1516 Attendance - Percent Present](#)

2. At which grade levels were the highest / lowest attendance rates based on students' percent tardy?
 - [1516 Attendance - Percent Tardy](#)

3. What interventions and supports will be used to increase students' percent present and decrease student tardiness?

An Attendance Data Analysis Exercise – continued

4. When will students' data be reviewed to determine how the interventions are impacting students' attendance?
5. Please take two minutes to debrief within your groups, and then select one member to recap your group's comments with the whole group.
6. Questions for the presenter.

Achievement Data Reports

Overview of Data Reports - [1516 Achievement - MAP by Average Percentile Rank](#)

Report updated nightly in Illuminate!

15-16 Grade Level	Count of Students	15-16 MAP Spring Reading Avg Percentile Rank	15-16 MAP Spring Math Avg Percentile Rank
1	98	60	63
2	97	53	54
3	129	52	61
4	139	45	55
5	135	45	53
6	129	42	49
7	99	61	71
8	121	54	56
K	100	62	63

Displays the average national percentile ranking of students' reading and math results from the Measures of Academic Progress (MAP) assessments.

For example, a rank of 60 indicates a score that was higher than 60% of the students in the norm group who took this assessment.

Additional Questions

