

EFFECTS OF DIRECT CONSULTATION-BASED TRAINING AND PEER COACHING ON  
THE FIDELITY OF IMPLEMENTATION OF THE TEACHING PYRAMID MODEL

BY

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## Abstract

This study used single subject research design to determine if direct consultation-based training and peer coaching could be used to increase treatment fidelity of the Teaching Pyramid Model in four rural preschool classrooms. The hypothesis of the study was that peer coaching could sustain the model as well as consultation-based training. Analysis of results supported that hypothesis. Results showed large effect sizes when comparing the treatment phases of the study to baseline.

## **Chapter I: Introduction**

Research has shown that student behavior plays a key role in academic success as well as social development. Providing multiple levels of evidence-based behavioral intervention has been shown to be effective in preventing behaviors of concern and facilitating social skill development. One model of tiered behavioral interventions that has been shown to be effective is school wide positive behavioral support (Horner, Sugai, Smolkowski, Eber, Nakasato, Todd, & Esperanza, 2009; McIntosh, Campbell, Carter, & Rossetto Dickey, 2009; George, George, Kern, & Fogt, 2013; Kramer, Caldarella, Young, Fischer, & Warren, 2014; Medley, Little, & Akin-Little, 2008; Martens & Andreen, 2013; Sailor, Stowe, Turnbull III, & Kleinhammer-Tramill, 2007; Sugai, & Homer, 2006; U.S. Dept. of Education, 2010). Research also supports the use of positive behavioral support in early childhood settings with focus on the behaviors and social skill development of infants through age five (Fox, Carta, Strain, Dunlap, & Hemmeter, 2010; Hemmeter, Ostrosky, & Fox, 2006; McLaren & Nelson, 2009; Perry, Dunne, McFadden, & Campbell, 2008; Powell, Dunlap, & Fox, 2006; Steed, Pomerleau, Muscott, & Rohde, 2013; Yates, Ostrosky, Cheatham, Fettig, Shaffer, & Santos, 2008) .

From a systems-level perspective, there are different areas of focus in regard to implementation of a positive behavior support system. There are school-wide systems, classroom systems, non-classroom systems, and individual systems (Frey, Lingo, & Nelson, 2008). Each of those systems creates different tasks for the stakeholders involved. One model used in a preschool setting is The Teaching Pyramid Model.



### *The Pyramid Model*

The Teaching Pyramid Model for Promoting the Social and Emotional Development of Infants and Young Children was created based upon public health models of prevention and intervention frameworks as well as the school-wide positive behavioral support three tiered triangle. It was developed by the Center on the Social and Emotional Foundations of Early Learning (CSEFEL) in partnership with many researchers and universities (Farmer, Farmer, Estell, & Hutchins, 2007; Fox & Hemmeter, 2009; Horner et al., 2009; McIntosh et al., 2009; Medley et al., 2008; Merrell & Buchanan, 2006; Sailor et al., 2007; Sugai, & Homer, 2008). Many prevention models contain universal, secondary, and tertiary interventions which aim to ensure social and emotional or academic development of children participating in the least restrictive environment (Fox et al., 2010; McConnell, Wackerle-Hollman, Roloff, & Rodriguez, 2014).

Within the Pyramid Model there are universal components which focus on building positive relationships and creating a quality environment (see appendix A). These universal components are visually represented in the bottom two levels of the pyramid. Positive interactions include those between the children, families, and colleagues of the early intervention setting which is described as the bottom level of the pyramid (Fox & Hemmeter, 2009). Research supports a need to build relationships and such positive relationships have been linked to positive child outcomes (Davis, 2003; Hamre, 2001; Pianta, Howes, Burchinal, Bryant, Clifford, Early, 2005; Pennsylvania Department of Education & the Department of Public Welfare, 2009). Specific practices which promote positive relationships include providing praise and encouragement, supporting play, responding to child conversations, promoting communication attempts of all

children, providing specific praise, developing relationships with families, and working together as colleagues in collaborative teaming (Fox & Hemmeter, 2009). Creating a supportive environment and encouraging child engagement in classroom activities is the second level of the pyramid and is also considered to be universal. Providing an environment that promotes social and emotional competence has also been linked to better child outcomes (Benedict, Horner, & Squires, 2007; Powell et al., 2006; Stormont, Lewis, & Beckner, 2005, Pennsylvania Department of Education & The Department of Public Welfare, 2009). Some of the specific practices employed at this level of the Teaching Pyramid Model include defining play centers, offering developmentally appropriate and balanced schedules of activities, providing adequate materials, structuring transitions, explicitly teaching a small number of rules and expectations, providing clear directions, and providing individual prompts to children who may show a need for more structure (Fox & Hemmeter, 2009; Hemmeter et al., 2006; Powell et al., 2006).

### *Secondary Components*

Secondary prevention within the Teaching Pyramid Model is the third level of the pyramid and includes explicit instruction in social skills and emotional regulation. Providing instruction in social skills and emotional regulation has been linked to better student outcomes (Jakibchuk & Smeriglio, 1976; Kohler, Anthony, Steighner, & Hoyson, 2001; Hughes & Carter, 2002; Tsao, Odom, Buysse, Skinner, West, & Vitztum-Komannecki, 2008). This tier is meant to support children who may be at-risk for developing social skill deficits but do not require individualized plans to be successful. Specific skills taught at this level of the pyramid include teaching children to identify and express emotions, social problem solving, self-regulation

initiating and maintaining interactions, coping skills, and friendship skills (Fox & Hemmeter, 2009).

The fourth level of the pyramid provides tertiary support and uses intensive and individualized intervention for children who do not respond to the other forms of support provided. When it is determined that children need this level of support a team is formed to begin the process of individualized positive behavior support. Individualized plans are made with the use of functional assessment and evidence-based practice (Fox, Dunlap, & Cushing, 2002; Fox & Hemmeter, 2009).

#### *Treatment Integrity*

One key component in the implementation of program-wide positive behavior support is the integrity with which procedures are used within the system (Lane, Kalberg, Bruhn, Mahoney, & Driscoll, 2008; Bradshaw, Debnam, Koth, & Leaf, 2009; Coleman, Roth, & West, 2009; Fox et al., 2010; Kaiser & Hemmeter, 2013).

Although it is recognized that treatment integrity is a component of importance in program implementation, research in regard to implementation of behavior intervention does not always measure treatment integrity. Gresham and Gansle conducted a review of behavioral research from 1980-1990. They found that slightly over 14% of the 181 studies reviewed gave a definition of treatment integrity. Moreover, they found a moderate correlation between level of integrity and magnitude of treatment outcome. In other words, they found that the greater the degree a treatment was implemented as planned, the greater the behavior change (Gresham & Gansle, 1993). A review of literature conducted by Lane and colleges found that very few studies

reported a measure of treatment integrity when researching effectiveness of preventative programs and that only some recognized it as a limitation of their study. They reviewed 19 studies and found only 5 to contain any information about treatment integrity while only 9 recognized it to be a limitation of their study (Lane et al., 2008). A more recent review of research in the areas of special education and school psychology found that fewer than half of the studies reporting use of intervention included any mention of treatment integrity (Harn, Parisi, & Stoolmiller, 2013; Sanetti, Gritter, & Dobey, 2011; Swanson, Wanzek, Haring, Ciullo, & McCulley, 2011).

Detrich (1999) explains that treatment fidelity needs to be examined anytime there are several methods that could be employed to serve the same function toward a goal. Because there are many ways to teach children, it is important to understand the variables that could influence teaching staff and affect how they implement a teaching plan with precision and consistency. Examination of the precision with which the teaching staff will follow through with implementation is the determination of treatment fidelity. Southam-Gerow & McLeod describe a need for observational data collection surrounding treatment fidelity implementation. Their review of research found many studies where teacher self-assessment checklists were used, but very few studies actually observed implementation of practice (Southam-Gerow & McLeod, 2013).

There is general lack of research in the area of assessing the fidelity of implementation of interventions (Graney & Shinn, 2005; Harn et al., 2013; Kavale, Holdnack, & Mostert, 2006; Sanetti et al., 2011; Swanson et al., 2011). Short-term studies have shown that the fidelity of implementation increases when there is specific training and monitoring of the interventions by

researchers. However, integrity of the implementation often suffers when there is no longer regular monitoring of the implementation of the interventions (Witt, Noell, LaFleur, & Mortenson, 1997; Noell et al., 2000; Noell, et al., 2005). Research fails to address how a system can monitor the fidelity of interventions after the researcher is no longer available (Abbott, Walton, & Greenwood, 2002).

### *Consultation*

One form of support system that has been found to be somewhat effective is behavioral consultation (Sterling-Turner, Watson, & Moore, 2002, Noell, Witt, Gilbertson, Ranier, Freeland, 1997; Noell, Witt, Lafleur, Mortenson, Ranier, & LeVelle, 2000; Noell, Witt, Slider, Connell, Gatti, Williams, Koenig, Resetar, & Duhon, 2005; Wickstrom, Jones, LaFleur, & Witt, 1998). In general, the most common form of consultation in a school setting is defined as an indirect service through which a teacher (consultee) gains support for a student (client) by problem-solving with a consultant (Bergan & Kratochwill, 1990; Caplan, 1970). This type of model is driven by an expert and is hierarchical in nature. When working with instructional consultation teams, the consultants working within the teams help the teachers monitor their fidelity throughout the steps. There is a consultant or facilitator who is trained in consultation technique who trains and meets with teachers weekly throughout the year. Team members often include general educators, special educators, school psychologists, guidance counselors, health providers, and any other professional who would be beneficial in helping the student (Knotek, 2005). School- based consultation has evolved to include instructional consultation teams. Although this type of model employs a collaborative effort among professionals, it still involves

a teacher taking recommendations from a consultant or consultants and then attempting to implement them on their own within a classroom setting while monitoring their own fidelity.

These instructional consultation teams focus on improving the ecology of the schools. Rosenfield and Gravois (1996) outline five steps of instructional consultation teams which include entry and contracting, problem identification and analysis, intervention planning, intervention implementation, and resolution/termination.

Entry includes an agreement at a systems level to use consultation as a technique within the system. Contracting is used at an individual level where conditions surrounding consultation are established between the consultant and the consultee.

The problem identification and analysis stage includes the use of interview to determine teacher needs and concerns. More specifically, Rosenfield and Gravois suggest there are seven steps involved in problem identification:

- (1) Review reason for referral and teacher perceptions
- (2) Prioritize concerns and determine which areas to target for intervention
- (3) Clarify concerns and how they could impact the classroom environment
- (4) Describe the problem in measurable terms
- (5) Select a data collection method and establish a baseline
- (6) Specify the “gap” between current performance and the expected performance
- (7) Establish a goal

Intervention planning requires the team to use data in determining what strategy will be used, when it will be implemented, how often it will be done, and the specific materials that will be used. It must be decided who will implement and monitor the intervention as well as how data

will be collected and how effectiveness will be determined. How often progress should be monitored is also a pivotal component in intervention planning, according to Rosenfield and Gravois.

Intervention implementation is next in the process. The case manager (or consultant) continues to be involved in a collaborative relationship with the teacher and any other members of the consultation team. If problems are noted with implementation, those concerns then become the focus of problem solving to be done by the team.

The final stage is referred to as resolution/termination. Consultation should not fade away unless the program is working well. When the program has been successful is it appropriate to fade consultation services. Teachers should be left with a way to access the consultant if their services are found to be needed in the future. A report of the success of the program should be made and success should be celebrated (Rosenfield & Gravois, 1996).

#### *Direct Behavior Consultation*

Direct Behavioral Consultation has also been used to facilitate the implementation of intervention. This type of model can include consultation support in development of the intervention, implementation of the interventions, and examination of the treatment fidelity with which the interventions were put into place. Many of these techniques include direct training and modeling of the intervention by the consultant, role playing, use of tutors, and direct observation of the teacher or student performing the intervention. These techniques were found to be effective in increasing treatment integrity (Gilbertson, Witt, LaFleur, Singletary, & VanDerHeyden, 2007; Noell et al., 1997; Noell, Duhon, Gatti, & Connell, 2002; Sterling-Turner, Watson, & Moore, 2002).

A study conducted by Kelleher, Riley-Tillman, and Power examined a direct head-to-head comparison of the effects of a hierarchical or expert driven consultation approach to one of a collaborative approach which included direct behavioral consultation on treatment integrity. During the expert driven consultation, instruction came from the expert and the teacher implemented their strategies. During the collaborative approach the expert and the teacher worked together to develop approaches. Overall, results found that the collaborative model demonstrated a more positive effective on the level of intervention implementation (Kelleher, Riley-Tillman, & Power, 2008).

Although the studies listed above showed success in improving treatment integrity, they were not able to demonstrate generalization of implementation skills by the teachers without the use of a researcher or consultant. More specifically, the researchers provided different levels of support during each study. During the phases in which support was not as readily available, treatment integrity often suffered for many of the teachers involved in the studies. The studies which maintained treatment integrity without consultant support focused on only one intervention, and not on teaching more generalized skills to teachers to aide them in future implementation of a variety of interventions.

### *Peer Coaching*

An alternative to traditional consultation techniques is Peer Coaching. Joyce, Showers, and Baker conducted a series of studies from 1980-1996 (Baker & Showers, 1984; Joyce, Bruce, & Showers, 1980; Showers, 1982). They examined the effectiveness of peer coaching in improving teacher implementation of new skills. Participants conducted weekly coaching sessions wherein teachers met to discuss classroom implementation of skills following a traditional in-service



training. The sessions focused on student response to teaching as well as implementation of curriculum. They found that implementation rose dramatically and that it didn't matter whether an expert conducted the meetings or the participants. From there, it was recommended that teachers form peer coaching groups to discuss the teaching process and use of new skills. Teachers enjoyed the process so much that after the studies were complete, they decided to stay in touch with their peer groups. As a result, it was suggested that peer coaching be built into the systematic structure of the schools.

More current research from Joyce and Showers (1996) outlines components of peer coaching within a system. They recognize that peer coaching is distinctly different from other forms of coaching which include technical coaching, collegial coaching, challenge coaching, and cognitive coaching. Other forms of coaching require use of verbal feedback while peer coaching does not. More specific components of peer coaching are as follows as directly quoted from Showers and Joyce, 1996:

“When working with entire faculties, all teachers must agree to be part of the coaching study teams. Teams must agree to:

1.
  - (a) Practice or use whatever change the faculty has decided to implement;
  - (b) Support one another in the change process, including sharing planning of instructional objectives and developing materials and lessons; and
  - (c) Collect data about the implementation process and the effects on students relative to the school's goals.
2. We have found it necessary and important to omit verbal feedback as a coaching component. The primary activity of peer coaching study teams is planning and developing curriculum and instruction in pursuit of shared goals. When teachers try to give feedback, collaborative activity tends to disintegrate. Omitting feedback in the coaching process has not depressed implementation or student growth.
3. We have needed to redefine the meaning of “coach”: when pairs of teachers observe each other the one teaching is the “coach,” and the one observing is the “coached.” In this process, teachers who are observing do so in order to learn from their colleague. There is no discussion of

the observation in the “technical feedback” sense that were used in earlier studies. Generally, these observations are followed by brief conversations on the order of “Thanks for letting me watch your work. I picked up some good ideas of how to work with my students.”

4. The collaborative work of peer coaching teams is much broader than observations and conferences. Many believe that the essence of the coaching transaction is to offer advice to teachers following observations. Not so. Rather, teachers learn from one another by planning instruction, developing support materials, watching one another work with students, and thinking together about the impact of their behavior on their student’s learning.” (Showers & Joyce, 1996, p.12).

Studies have shown that use of a peer coaching model has led to more implementation of change in the classroom. Research has shown that peer coaching has lead to better implementation of new teaching skills and strategies, better retention of skills, and a greater tendency to try new strategies in the classroom (Baker & Showers, 1984; Kohlerl, McCullough, & Buchan, 1995; Kohler, McCullough, & Shearer, 2001; Showers, 1982; 1984; 1992; 1995).

### *Research Questions and Hypothesis*

The current research sought to determine the following:

- (1) Does use of a peer coaching model lead to increase of fidelity of implementation of the Teaching Pyramid Model?
- (2) Is a trainer needed to guide the peer coaching model after it has been put into effect?

The current researcher hypothesized that implementation fidelity of the Pyramid Model will improve by implementing a peer coaching model. The hypothesis is that a peer coaching model will improve the implementation of the program without continued presence of a trainer.

## **Chapter II: Literature Review**

### *School-Wide Positive Behavior Support (SWPBS)*

In 1968, the Journal of Applied Behavior Analysis published their first issue. In that issue researchers took experimental analysis of behavior and applied it to the study of human behavior. Many years later, application of behavioral principles are being applied in school settings in a practical way with much more consistency. Revisions to the Individuals with Disabilities Education Act (IDEA) (1997) added such terms as “positive behavioral interventions and supports,” “functional behavioral assessment (FBA),” and “positive behavior supports” (PBS) to the amended document and called for application of those constructs within a school setting. These revisions reflected concerns within the school system surrounding an increase in violence and lack of discipline in many American schools. These concerns were growing within a general education setting and were not specific to children placed in a special education program (P.L. 94-142; IDEA 1997; Sugai & Horner, 2002; US Department of Education, 2010). Research has found that providing positive behavior support is more effective in remediating those challenges than using punishment within the school system.

School districts have employed the use of many different techniques in an attempt to reduce anti-social or rule breaking behaviors. Some examples might include restating the rules and the consequences, increasing surveillance to catch students in the act, use of a continuum of consequences to meet repeated offences, and trying to establish more consistency in staff discipline (Sugai & Horner, 2002). Research suggests that such use of a punishment sequence can actually cause an increase in antisocial behavior in those children who have shown a history of demonstrating antisocial behavior. Such studies have also found that school districts tend to

have a reactive approach rather than a preventative approach when such a structure is in place (Mayer, 1995; Mayer, Butterworth, Nafpaktitis, & Sulzer-Azaroff, 1983; Surgi & Horner 2002; Surgi & Horner, 2008).

More specifically, Mayer and Butterworth outlined several ways in which school districts actually perpetuate violence and rule breaking behaviors. Such procreators of student violence include punishment, modeling, ignoring violent acts, reinforcing violent and/or cathartic activities, and misusing behavior management procedures. Punishment often causes a student to feel the need to “fight back.” They may take their anger out on another student or choose to vandalize school property. Therefore, punishment tends to foster more violent behaviors. Teachers will often model or show punishment by example. They may punish a particular student in an attempt to reduce the behavior which also models violence for other students in the room. Therefore, it increases violent behavior in students as it was modeled by their teacher. Ignoring violent behavior is also counterproductive as the demonstrated violence by the child is observed and imitated by their peers. Adults will sometimes encourage children to let their aggression out in a less harmful way such as hitting a pillow. Research has found that children who engage in such controlled activities will often demonstrate more aggressive behaviors rather than less in an unsupervised situation. Finally, the use of inappropriate behavior management techniques are also counterproductive in facilitating pro-social student behavior. If a teacher chooses a punishment that is not at all punishing to the student it reinforces the inappropriate behavior. For example, some children may act out in an attempt to be removed from the room in order to avoid their work (Mayer & Butterworth, 1979; Mayer, 1995; Mayer et al., 1983).

Mayer and Butterworth also conducted a study which compared a total of 19 school districts. Some districts used punishment methods while others used positive reinforcement. Results of the study found that the schools using positive reinforcement saw a reduction of dollar amounts spent on vandalism. Districts using positive reinforcement also saw a reduction in inappropriate behaviors of the students in the experimental group in comparison to the control group. In addition, the average rate of positive interaction between teachers and students increased in the experimental group but did not increase in the control group (Mayer & Butterworth, 1979).

In more recent times, there is general lack of research in reference to the effectiveness of use of such techniques as zero tolerance policies; use of security personnel; use of metal detectors; use of surveillance cameras; adopting school uniforms; using in and out of school detention, suspension, and expulsion; and alternative school placements (Sugai & Horner, 2002). Most studies focus on student and teacher perception of these types of techniques rather than the effectiveness of the techniques or use of such techniques with students who have disabilities (Pas, Bradshaw, Hershfeltd, & Leaf, 2010; Dickinson & Miller, 2006). The few studies examining the effectiveness of such reactive approaches have found reactive techniques to be effective in reducing problem behavior in the short-term. Studies found such techniques to work immediately but not maintain changes in behavior or the school climate. Punishment techniques used in isolation have been found to reinforce anti-social behavior (McCord, 1995).

Many organizations have advocated for the use of a more proactive and preventative approach to working with children. Proponents of a more preventative model include: the Center for the Study and Prevention of School Violence; American Psychological Association; National Association of School Psychologists; Institute on Violence and Destructive Behavior; Center on

Effective Collaboration and Practice; Office of Safe and Drug Free Schools; Office of Special Education Programs; and the US Department of Health and Human Services.

In 2001, the US Department of Health and Human Services published a report which examined the behavioral needs of America's communities and gave recommendations about the best ways to address those needs. They examined a rise in violent behavior of America's youth ages 10- 20 from 1983-1993. Violent behavior often resulted in injury, disability, or even death and was happening on a more frequent basis. Such rising statistics caused worry in schools and communities. Since 1993 violence has declined in America as measured by arrest rates, reports of victimization, and hospital emergency records. However, when children were given a confidential chance to record the amount of violence they had inflicted on others, those numbers remained the same. They also identified two onset trajectories of youth violence. It was founded that children who demonstrate violence do so either before puberty or in adolescence. Those children who became violent before the age of 13 were likely to commit more violent and serious crimes for a longer period of time. It was determined that the pattern of violence tends to escalate throughout childhood and in some cases it continues into adulthood. It was determined that prevention of violent behavior needed to be done during early years of child development in order to reduce the risk of them becoming violent adults. Through large scale study of prevention programs the US Department of Health was able to identify components that are effective in preventing violence in youth (US Department of Health and Human Services, 2001).

Some suggestions included use of a program that addressed not only individual children but also environmental conditions. A combination of building individual skills in children, training of parents, and improving the school climate were found to be vital components in facilitation of

pro-social behavior. More focus should be placed on changing social context than on changing individual attitudes. Children should be given more opportunities to experience academic success and a positive school and classroom climate should be maintained. An agenda that focuses on primary prevention should take priority over all others (US Department of Health and Human Services, 2001). There is no shortage of research that supports the use of such a preventative model of service delivery (Bradshaw, Mitchell, & Leaf, 2010; Curtis, Van Horne, Robertson, & Karvonen, 2010; Horner et al. 2009; McIntosh et al., 2009; Medley et al., 2008; Muscott, Mann, Benjamin, Gately, Bell, & Muscott, 2004; Sailor et al., 2007; Sherrod, Getch, & Ziomek-Daigle, 2009; Sugai & Horner, 2008; Sugai, & Homer, 2006; Sugai et al., 2000; Warren, Bohanon-Edmonson, Turnbull, Sailor Wickham, & Griggs, 2006; Webster-Stratton, Reid, & Stoolmiller, 2008).

One way to facilitate a preventative model of service delivery is through School-Wide Positive behavior support (SWPBS). One definition of SWPBS is provided by the Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs. As quoted directly from the Implementation Blueprint and Self-Assessment: School-Wide Positive Behavioral Interventions and Supports document,

“School-Wide Positive behavior support (SWPBS) is a framework or approach comprised of intervention practices and organizational systems for establishing the social culture, learning and teaching environment, and individual behavior supports needed to achieve academic and social success for all students.” (Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs, 2010, pg. 12).

It is a framework which employs a continuum of evidence-based interventions to achieve academic and behavioral outcomes for all students. As reported in the blueprint, there are four broad elements involved in the implementation of SWPBS. Those elements include operationally defined and valued outcomes, behavioral and biomedical sciences, research-validated practices, and systems change.

Specific social behavior outcomes as well as academic outcomes should be linked to overall school improvement objectives. Such improvement objectives could include state priorities as well as individual goals for students and teachers. Intended outcomes of the system in its simplest form are for students to experience positive lifestyle changes. Such positive lifestyle changes could lead to an increase in social belonging. SWPBS should be implemented not only to improve social interaction for individual children, but also to improve overall school climate (Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs, 2010).

Implementation of SWPBS also requires professionals to look at all aspects of need in relation to individual students as well as the system. Use of behavioral and biomedical sciences helps a district to take an all-encompassing approach to service delivery. When evaluating all aspects of behavioral, emotional, social, and other mental health risks and issues stakeholders should operate under specific assumptions. These assumptions are that behavior is: environmentally manipulable; can be taught; is lawful & predictable; is affected by environmental factors; and interacts with biophysical factors (Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs, 2010).



Research-validated practices should be used within the framework of SWPBS. Such practices include the use of evidence-based interventions, strategies, and curriculum. Use of evidenced-based practices allow for the use of data to guide decision making within the system. In order for a practice to be validated there must be a functional relationship between the implementation of the practice and the outcome Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs, 2010).

The final component is systems change. Systems level change requires the stakeholders involved to become efficient in selecting the most appropriate plan of action for individual children as well as for the entire district. Faculty and staff need to revise policies and procedures, determine research support, and gain administrative leadership (Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs, 2010). Within those broad components are six defining characteristics which are embedded in SWPBS. Those six characteristics include being preventative, instructionally oriented, culturally responsive, function-based, systems implementation focused, and evidence-based.

The preventative perspective employs multiple levels of interventions. SWPBS has adopted a three-tiered model of service delivery (Lewis & Sugai, 1999; Sugai et al., 2000; Sugai & Horner, 2008; Walker et al., 1996). The universal or primary level addresses the majority of the population. This level is preventative in nature and addresses about 80% of the children in a district. There are guidelines which fall under the preventative level of service delivery. Such guidelines include identifying ‘triggers’ to problem behaviors and removing any antecedent event that happens before a problem behavior occurs. Likewise, it requires examination of

preceding events that could be reinforcing the inappropriate behaviors. Intervention practices are to be employed by the faculty and staff in order to prevent problem behaviors. They are to be replaced by antecedent events as well as consequences that promote appropriate behaviors. Environments are to be arranged in order to enhance the learning environment and acquisition of pro-social and academic skills. Children should also be taught social skills and appropriate interaction rather than simply correcting inappropriate behaviors (Lewis & Sugai, 1999; Sugai et al., 2000; Sugai & Horner, 2008; Walker et al., 1996; Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs, 2010).

The secondary level of the pyramid includes 15% or less of the children in the district. In this level of service delivery, social skills are taught as explicitly as academic skills. At a school and class-wide level expectations are put into place for children and adults. Those expectations are explicitly taught to children and staff. For children who are considered to be ‘at-risk’ of failure, skills are taught from an evidence-based curriculum more frequently. Those students who do not respond well to that level of support are considered to be at a high risk for failure. Students who are at high risk are then provided with more individualized instruction in social skill development. Skills to be taught are determined through functional behavioral assessment (Lewis & Sugai, 1999; Sugai et.al., 2000; Sugai & Horner, 2008; Walker et al., 1996; Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs, 2010).

The third level is tertiary prevention which services 5% or less of the children in the district. Adult reinforcement of behavior is based on function. Sound behavioral techniques in positive

and negative reinforcement are used to help increase pro-social behavior and decrease negative behaviors. Positive reinforcement aims to increase the probability of a behavior occurring through presentation of a reinforcing consequence. Negative reinforcement is the increasing of a behavior by removal of an undesirable stimulus (Curtis, Van Horne, Robertson, & Karvonen, 2010). Such reinforcement is determined through the use of applied behavior analysis along with behavioral theory and positive behavior support. The function of the behavior should be determined while also taking into consideration the environment fostering the behavior. This level of support includes more focus on the teacher and the types of techniques employed. Teachers may need to reexamine the environment as well as redesigning their teaching techniques. The structure of the SWPBS framework is meant to be flexible. Therefore, implementation occurs in phases that are to change over time and not become static (Lewis & Sugai, 1999; Sugai et al., 2000; Sugai & Horner, 2008; Walker et al., 1996; Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs, 2010).

There are four phases that typically occur in implementation of SWPBS. The phases include exploration, demonstration, elaboration, and continuous regeneration. During exploration the needs of the system are analyzed as well as the needs of individual classrooms and children. Demonstration links research to practice as examination of resources takes place and it is determined if goals can be met with the current level of resources. The system is also put into effect by real implementers. During the elaboration phase it is determined if techniques can be replicated across settings. Elaboration also includes determining cost-effectiveness and ways to expand the efforts. Systems adoption includes development of policy, determining continued

funding, and coordination of implementation. Along with Systems adoption comes the commitment of the system to fidelity of implementation of evidence-based practices and monitoring of implementation (Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs, 2010).

When examining implementation in more detail, George, Harrower, & Knoster have outlined six steps to implementation of school-wide positive behavior support (SWPBS) within a system. Those six steps include the following: (a) establishing a foundation for collaboration/operation, (b) building faculty involvement, (c) establishing a data-based design making-system, (d) brainstorming and selecting strategies within an action planning process, (e) implementing school-wide program through an action plan, and (f) monitoring, evaluating, and modifying the program (George, Harrower, & Knoster, 2003; pg. 171). They go on to outline specific components under each broad category which need to be in place to facilitate the implementation of SWPBS. Such criteria were placed into the Positive Behavior Support: Comprehensive Assessment Tool (PBS-CAT) which was created to help districts assess their needs.

There are seven specific components found under the first category of establishing a foundation for collaboration/operation. In summary, those components include creation of a school improvement plan, establishing a team which includes a variety of professionals, familiarizing all faculty and staff with the mission statement and improvement plan, and meeting as a team once per month (George, Harrower, & Knoster, 2003).

In building faculty involvement, George et al. suggests that 80% of faculty members should be committed to decreasing problem behaviors. In the same respect, at least 80% of the faculty should be committed to increasing academic performance of students. Faculty should understand

the needs of the district and be trained in basic behavioral principles. Finally, behavior problems should be addressed quickly and effectively across all settings (George, Harrower, & Knoster, 2003).

When establishing a data-based decision-making system discipline referrals should be tracked and monitored. The data should be functional, entered into a system weekly, analyzed at least once per month by the team, and used in on-going decision making. There should also be clearly defined definitions of behaviors of concern (George, Harrower, & Knoster, 2003).

There should be a variety of strategies available to the faculty and staff which effectively address problem behavior. Emergency procedures should be outlined for the entire district, which include procedures for individuals as well as school-wide levels. Consequence procedures should be outlined and defined clearly. Those consequences should be implemented with consistency. Three to five positively stated expectations should be clearly defined and relayed to students and faculty. Rules should also be defined to help students meet expectations across all settings. Lessons should be developed which explicitly teach students the expectations. A school-wide and recognition system should be developed (George, Harrower, & Knoster, 2003).

Implementation of the program should be done through an action plan. All administrators, faculty, and staff are trained in the procedures involved. A budget should be established to provide for teaching, rewards, and planning. Formal strategies should be in place to involve families in the process. The environment should be monitored to look at possible impact on behavior as well as scheduling of student movement. All faculty and staff should be involved in implementation of the program across all settings including those outside of the classroom.

Expected behaviors should be taught to the students and positive behaviors should be rewarded and acknowledged regularly (George et al., 2003).

Finally, the program must be monitored, evaluated, and modified based on need. When evaluating the entire system, 80% of students should respond consistently and successfully to the system. On-going decision making should be based on data collection. Results of data collection should be shared at faculty meetings. Trainings for students and faculties are developed and implemented based on data collected. The program must emphasize the positive aspects of behavior rather than behaviors of concern (George, Harrower, & Knoster, 2003).

### *Effectiveness of SWPBS*

Sugai & Horner (2008) outlined five major findings in regard to the effectiveness and implementation of SWPBS. The first finding was that schools can implement the framework of SWPBS when they are provided with support from trainers and coaches (Colvin et al., 1993; George, George, Kern, & Fogt, 2013; Kramer, Caldarella, Young, Fischer, & Warren, 2014; Lewis, Sugai, & Colvin, 1998; Metzler, Biglan, Rusby, & Sprague, 2001; Nelson, Martella, & Galand, 1998; Safran & Oswald, 2003). Second, research has shown that there has been a reduction in problem behaviors exhibited in hallways, cafeterias, playground, and other non-classroom settings (Colvin, Sugai, Good, & Lee, 1997; George, George, Kern, & Fogt, 2013; Heck, Collins, & Peterson, 2001; Kartub, Tayler-Green, March, & Horner, 2000; Kramer, Caldarella, Young, Fischer, & Warren, 2014; Leedy, Bates, & Safran, 2004; Lewis, Colvin, & Sugai, 2000; Lewis, Sugai, & Colvin, 1998; Nelson, Colvin, & Smith, 1996; Putnam, Handler, Ramirez-Platt, & Luiselli, 2003; Todd, Haugen, Anderson, & Spriggs, 2002). Third, functional behavioral assessments have been found to be effective in benefiting students who have

displayed behavior problems (Fairbanks, Sugai, Guardino, & Lathrop, 2007; Ingram, Lewis-Palmer, & Sugai, 2005; March & Horner, 2002; Todd, Horner, & Sugai, 1999). Fourth, Improvements in academic outcomes are related to school climate as well as student behavior (Fleming, Haggerty, Catalanok, Harachi, Mazza, & Gruman, 2005; McIntosh, Chard, Bolland, & Horner, 2006). Fifth, it is likely that those schools who implement a comprehensive and preventative program which includes the use of teaching social skills, positive school-wide discipline, parent involvement, and curriculum restructuring will experience a decrease of anti-social behavior (Gottfredson, Gottfredson, & Hybl, 1993; Lipsey & Wilson, 1993; Mayer et al., 1983; May et al., 1993).

More specific research surrounding the effectiveness of SWPBS focuses on many broad areas. Some research focuses on the ability of the district to implement the framework of SWPBS. Other research examines the impact of SWPBS on student behavior. The school climate is also assessed to some degree in many studies along with assessment of academic achievement.

One study conducted by Horner, Sugai, Smolkowski et al., (2009) examined the impact of SWPBS on discipline referral, perception of school climate, and academic achievement. It also examined the implementation of the model.

The study took place between 2002 and 2006 in elementary schools located in Illinois and Hawaii. School districts participating in the study had more than 100 schools implementing SWPBS for five years. A total of 60 schools participated in the study with 30 from each state. They were selected based on three different criteria. The first criteria was based on the ability of the state to conduct district wide training. Second, the districts nominated themselves through administrative application. Third, the districts needed to have no prior direct training in the use

of SWPBS. The first 30 schools volunteering from each state that met the criteria were used in the study. After the schools were selected, they were randomly assigned to be part of a treatment group or a control group which received delayed treatment. Due to changes in administration the researchers needed to randomly select more participants to compensate for the districts choosing to no longer be involved. This resulted in 33 districts participating in the treatment group and 30 in the control/delayed treatment group. Throughout the three years of implementation, more shifts took place and resulted in the participation of 30 schools in the treatment group and 23 in the control/delayed treatment groups. The average number of students in each district was 471 students. In regard to ethnicity of the students, 61% were non-white and 51% of the students qualified for free or reduced lunch. The average percentage of students having IEP's was 9%.

The design was a randomized, wait-list control effectiveness trial with the groups measured repeatedly. Measurement of four variables was conducted at three separate times with ongoing measurement after the third time. The first time was prior to training. After the treatment group had one year of SWPBSW training, the second measure was taken. After the control group received training, the third measure was taken and continuous measurement was taken after that.

Four measures were implemented during each of the treatments described in the paragraph above. Measures examined the successfulness of implementation after training, impact of SWPBS on perceptions of school safety, reported levels of office discipline referrals, and the impact of SWPBS on the percentage of third graders meeting the state achievement standard in reading.

Implementation of the model was evaluated using the School-Wide Evaluation Tool (SET). It contained 28 items which examined the most important elements involved in implementing



SWPBS. An independent evaluator who was not employed by the school district conducted observations. Inter observer agreement was obtained at 85% agreement. Two analyses were completed on the results of the SET. The first was an unadjusted Time X Condition group analysis which included data from the first two sets of data recorded. This was completed to determine the immediate effects of training. The second analysis was a random coefficients analysis which examined more long-term results. Results of the Time X Condition group analysis were statistically significant. Treatment groups improved .328 more than the control/delayed group. These results suggest that implementation improved after the direct training was given to the treatment group which was greater than that of the control group. A partial correlation coefficient was also computed to estimate effect size. For Time X Condition the partial  $r$  was .67 and Cohen's  $d$  was 1.78. Further analysis showed that the control group did not differ from the treatment group before training was implemented ( $-0.0001$ ),  $t(59)=-.03$ ,  $p=.9765$ , but did differ significantly after treatment was implemented. When examining the treatment group in isolation, there was a significant difference between the baseline condition and the treatment condition (.405),  $t(53)=11.84$ ,  $p < .0001$ . When comparing the treatment group to the control group during the treatment phase, there was a significant difference between the treatment group and the control group (.327),  $t(53)= 7.88$ ,  $p < .0001$ . The control group, which had not received direct training, improved only slightly between the implementation of the first two measure sets (.0777),  $t(53)=2.06$ ,  $p=.0441$ . Therefore, there was a significant effect for the SET scores between groups and within groups. The second analysis found similar results in that the treatment group improved implementation after training was given and that the improvement was significantly more than the control group. As the implementation continued to be measured

for both groups after training had been implemented, the groups continued to make change, but not at a clinically significant rate.

The School Social Survey (SSS) was used to measure the perceived school safety before, during, and after implementation of SWPBS. There are two scores yielded from this measure. One is a Risk Factor score which comes from 17 questions. The other is a Protective Factor score which comes from 16 questions. There were no pretest differences between the treatment and control groups. Results found that there was a statistically significant change within the treatment group when comparing perceptions before and after training was administered ( $-.064$ ),  $t(35)=-2.55$ ,  $p=.0154$ . These results suggest that those surveyed felt more positive about the school climate after training had occurred. The control group did not yield a statistically significant difference when surveys were administered at different times during their baseline condition ( $.026$ ),  $t(35)=-1.54$ ,  $p=.0496$ . Rather, in the absence of training, the control group indicated an increase in perceived risk ( $.039$ ),  $t(35)=2.03$ ,  $p=.0496$ . When examining both groups, there was a statistically significant decrease in perceived risk after training for both groups: Treatment,  $t(37)=-2.29$ ,  $p=.0278$ ,  $p=.0278$ ; Control,  $t(37)=-2.69$ ,  $p=.0107$ .

The study was not able to compare office referrals before and after administration of SWPBS as the post implementation data collected did not meet established standards. Although a pre and post-test comparison could not be made, the number of discipline referrals were compared to the SWIS national data base which included 1,010 elementary schools. The schools participating in the study reported rates that were at or below the average reported through the database. A direct correlation cannot be made between the implementation of SWPBS and number of referrals in the absence of pre and post implementation data.

When analyzing academic outcomes, the percentage of third graders meeting the state reading standard was assessed once per year. Results showed that the Time X Condition effect was not statistically significant (.036),  $t(57)=1.21$ ,  $p=.2307$ . There was a statistically significant difference when comparing scores before and after training occurred. The statistically significant difference within the treatment group was (.056),  $t(57)=2.75$ ,  $p=.0080$ , and between treatment and the control group (.111),  $t(57)=2.20$ ,  $p=.0320$  with a partial correlation of  $r=.28$  and Cohen's  $d=.58$  for latter comparison. The authors cautioned that the academic results are preliminary in nature and require further research (Horner et al., 2009).

Another study conducted by Sherod, Getch, & Ziomek-Daigle (2009) examined the impact of SWPBS on office referrals within an elementary school. Participants in the study were 468 students, 51% of whom were female and 49% of whom were male. In regard to ethnicity, 52% of the students were African American, 31% were white, 7% were multiracial, 5% were Asian, and 5% were Hispanic.

As the students received the school-wide approach, the discipline records were also monitored. Students who received three or more referrals in the fall term were invited to participate in a counseling group called Positive Results in Discipline Education (PRIDE). Five children were identified to participate in the PRIDE Group.

There were two levels of implementation. There was a school-wide initiative and the targeted group approach. The school-wide program included lessons taught to each student by their homeroom teachers during the first three weeks of school. Lessons focused on teaching children school-wide rules, school expectations, and history of the school. Posters were placed throughout the school and a quiz was given on the rules at the end of the three weeks. Behavior of the

targeted group was monitored through a modified version of the Empowered Youth Programs Academic Monitoring Form (AMF). The form was completed weekly to document an improvement or decline in behavior. There were six items which focused on behavior information and six which focused on study habits.

There was a 26% decrease in the number of referrals made to the office. The number of referrals from 2006-2007 school year there were 219 referrals before the implementation of the program. During the 2007-2008 school years there were 162 referrals after the implementation of the program. Referrals were also examined for reasons of referral and those areas were targeted during lessons. Referrals for not following directions decreased by 43%, physical aggression referrals decreased by 40%, bus referrals decreased by 53%, and referrals for overall inappropriate behavior decreased by 66%. There were some increases in negative behaviors; number of referrals for disrespectful behavior increased by 25% and referrals for disruptive behavior increased by 63%.

Upon examination of the target group, many of the students made progress after the use of the counseling sessions. As measured by the AMF which is a Likert-style scale of answers, three of the five students received an increase of positive teacher ratings in regard to behavior and study skills. One student's behavior average remained the same and one student's decreased. Data was analyzed using a t test which indicated that behavior referrals significantly decreased ( $p=.009$ ,  $p.05$ ) for the targeted student group after intervention (Sherrod, Getch, & Ziomek-Daigle, 2009).

Positive behavior support is showing promise within a school-age setting. PBS has been found to address many of the social, emotional, and behavioral needs of school-age children.

Research suggests that such a model could also be beneficial in fostering emotional competence in an early childhood setting.

### *Emotional Competence of Young Children*

Social competence has been defined in different terms. One definition of social competence proposed by Odom & McConnell stated, “the effective and appropriate use of social behavior in interactions” (Odom & McConnell, 1992, p.239). An earlier definition offered by Odom and McConnell suggested that social competence was, “the interpersonal social performance of children with other children or adults as judged by significant social agents in the child’s environment” (Odom & McConnell, 1985, p.9). Demonstration of social competence takes place when a child interacts with their peer group. Wright identified two dimensions that are considered to be an important part of social competence. A child must be able to select the appropriate behavior for the context of the situation and they must also be effective in achieving their personal social goals (Wright, 1980). Some of the identified social goals of young children could include pretend play, comfort, information seeking, attention, assistance, information providing, support, or aggression (Brown, Odom, & Holcombe, 1996). Research has found that children use behavior strategies within a social interaction that lead to accomplishing their social goals (Brown et al., 1996; Erdley & Asher, 1999). When children attempt to identify appropriate behavior based on the context of their environment they need to learn and understand the norms of their peer group as well as the norms of their classroom. Social appropriateness is also dependent upon a child’s sex and culture (Chang, 2004). Selection of the appropriate behaviors that address both context as well as the child’s goals demonstrates social competence (Brown, Odom, & McConnell, 2008).

There is a continuum of social competence. Children who demonstrate appropriate behavioral strategies which are accepted by their peer group as young as 3-4 years of age are at one end. At the other end of the continuum are children who tend to be aggressive, socially withdrawn, isolated, and demonstrate an overall lack of social competence. The types of inappropriate behaviors exhibited can be broadly described as internal and external behaviors of concern (Brown et al., 2008; Vaughn, Colvin, Azria, Caya, & Krzysik, 2001). If children show a high degree of internalizing and externalizing problems they are often ignored or rejected by their peers. There are many factors that could contribute to a child's success within their peer group which could also include their appearance, race, sex, or presence of a disability. Although these other factors can play a role, the most significant factor in acceptance or rejection by the peer group is that of demonstration of social competence. In relation to development of future school success, there are specific skills associated with emotional competence which have been identified as being linked to future school success. Such skills include self-confidence, concentration, persistence to follow through with a challenging task, and the capacity to develop positive relationships with peers and adults (Brown et al., 2008).

A child's development of social competence can be influenced by environmental factors as well as physiological factors.

#### *Neurology and Temperament*

A study conducted by Fox et al., 1995 examined brain development and the role it takes in development of social competence in children four years of age. An electroencephalogram (EEG) was used to examine brain activity of children engaged in several tasks associated with social interaction. It was discovered that children who were more actively engaged in social

interaction had more activity in the left frontal lobe. Children who were more withdrawn and demonstrated less social competence had more brain activity in the right frontal lobe (Fox et al., 1995). Such differences in frontal lobe function have been linked to temperament.

There are differences between temperament, social competence, and emotional regulation. However, they are all alike in the sense that they are all different responses to environmental stimuli. Temperament tends to focus more on the intensity with which the child reacts to situations, their preference for social interaction, and the emotions associated with the response (fear, joy, etc.). Rimm-Kaufman and Kagan examined two different types of temperament found in young children. They examined inhibited and uninhibited demonstrations of behavior among infants between the ages of 4 months to 21 months. They then compared their temperament demonstrated at those ages to their later adjustment to kindergarten. Children were chosen to participate in the study based on their stability of temperament over time. There were 14 high reactive inhibited children (8 girls, and 6 boys) and 17 low reactive uninhibited participants (7 girls, and 10 boys). Children participated in laboratory batteries at 4 months; 14 months; and 21 months. Results found that when those same children entered kindergarten that their temperament styles had stayed relatively stable. They found that the uninhibited children spoke out more during large group activities after entering kindergarten. The uninhibited children spoke more in general to peers. However, they were also more likely to speak out in class at inappropriate times than their more inhibited peers. Children who were classified as inhibited stared off more often than their uninhibited peers. The study found that all children progressed in participation in the classroom over the first four months of kindergarten. Children who were uninhibited and talking out often began to better control their impulse to blurt out. The study

found that girls were more likely to talk out loud when they were not permitted while boys were more likely to whisper to each other out of turn. Both genders showed progress over the first four months of kindergarten. Inhibited children began to approach their teachers more and started to move away from only playing around the parameters of the classroom. Each child progressed at a different rate in their adjustment to the classroom. Findings of this study were important because it suggested that a child's exposure as an infant coupled with their biology can impact their social and emotional development throughout preschool and into kindergarten (Rimm-Kaufman & Kagan, 2005).

Current research in neuroscience, molecular biology, genomics, and epigenetics shows that genes create the basis of brain development. However, environment affects how neural circuitry works over time. Ongoing interactions between genetic predisposition and early childhood experiences determines the trajectory of development in learning, behavior, and physical and mental health for a lifetime (Fox, Levitt, & Nelson, 2010; Meaney, 2010; Shonkoff, 2012). Interventionists are employing evidence-based teaching methods that focus on far more than academic skills. It is recognized that a need to teach social and emotional skills is growing and such evidence-based programming targets skills like self-regulation, problem-solving, recognition of emotion, executive skill function, and ability to maintain attention (Shonkoff, 2012).

### *Family Factors*

A child's family structure contributes significantly to their overall growth and development as well as their development of emotional competence. There are specific family factors that have been linked to demonstration of difficult behavior in young children. Such factors can



include maternal depression, limited social support, stressful family events, harsh parenting, and overall family instability (Haden et al., 2000; Spieker, Larson, Lewis, Keller, & Gilchrist, 1999; Stormont, 1998).

With so many different factors impacting a child's development of emotional competence, it seems fitting that teachers and caregivers develop tools to facilitate their skill development. One way to help children in their development is the application of school-wide positive behavioral support to a preschool setting.

### *The Need for Positive Behavior Support in Preschool Settings*

The number of children who receive structured schooling in the United States before the age of five has been increasing and decreasing at an unsteady rate. When examining the trends of child enrollment in center-based programs, 53% of children were enrolled in 1991. That number increased to 60% in 1999, which then decreased to 57% in 2005 (National Institute for Early Education Research, 2010). The percentage of those children who demonstrate social and emotional needs vary depending on the sample population. It is estimated that 10-15% of those children who attend preschool will demonstrate mild to moderate difficulty in developing social and emotional skills (Campbell, 1995; Cornely & Bromet, 1986; Earls, 1980). A study conducted by Lavigne et al. (1996) found that 21% of children attending preschool met the criteria for a diagnosable disorder. Furthermore, 9% were classified as severe (Lavigne, Gibbons, Christoffel, Arend, Rosenbaum, Binns, Dawson, Sobel, & Isaacs, 1996). It is common for children to express some form of aggressive and/or anti-social behavior during their early childhood years. However, for a majority of young children, the demonstration of aggressive and inappropriate behaviors is short lived. As social skills and self-regulation skills develop, children

learn more socially acceptable and productive ways of expressing and regulating their emotions while expressing their needs (Campbell et al., 2006). There are some children who have a more difficult time learning to regulate their emotions and who demonstrate challenging behaviors for a longer period of time. Those children who demonstrate physically aggressive behaviors at a level that is above average compared to others their age are at greater risk for adjustment difficulties which can impact social and academic development (Campbell et al., 2006).

There is growing concern about the number of children who demonstrate inappropriate and difficult behaviors in early childhood settings. Specific behaviors of concern include noncompliance, biting, hitting, tantrums, verbal abuse, withdrawal, yelling, and difficulty interacting socially with peers and adults. Such behaviors can interfere with learning and also prevent a child from establishing social networks (Benedict, Horner, & Squires, 2007; Campbell, Spieker, Burchinal, Poe, & the NICHD Early Child Care Research Network, 2006). Furthermore, the consequences for such aggressive behavior is increasingly resulting in suspension from preschool programs. Preschool children are three times more likely to be expelled from their preschool program than children in grades K-12 (Gilliam, 2005). Removing a child from their preschool program results in difficulties in Kindergarten and beyond (August, Realmuto, Hektner, & Bloomquist, 2001; Reid, 1993). It is difficult to determine current rates of preschool expulsion. A search of peer-reviewed articles did not find research examining such trends. However, the U.S. Department of Education does publish civil rights data collection. In 2014, it was reported that there appears to be a disproportionate number of suspensions for black children, boys, and children who have disabilities attending preschool in the United States. Black children make up only 18% of overall preschool enrollment, but 48% of black children were

reported to be suspended in 2014 from preschool programs. In contrast, white children make up 43% of total preschool enrollment, but only 26% of those white children were suspended from preschool programs in 2014. Boys make up 54% of overall preschool enrollment. 79% of boys enrolled are suspended and 82% are suspended more than one time per year. Students who have disabilities were reported to be more than twice as likely to receive suspension as their typically developing peers (U.S. Department of Education, 2014). Research suggests that applying positive behavior support in a preschool setting could be beneficial in preventing such behaviors of concern and facilitating growth in social skills development.

### *Positive Behavior Support in Preschool Settings*

In the 1990's Brown, Odom, and Conroy began to suggest that the use of a decision-making hierarchy be used to help improve young children's social interactions (Brown & Conroy, 1997; Odom & Brown, 1993). In 2001, they expanded on that idea to include class-wide intervention strategies. In that model they proposed the use of the least intrusive classroom interventions before the use of more intrusive and individualized interventions. It was suggested that interventionists try at least two class-wide interventions coupled with the use of developmentally appropriate practice (DAP) to influence the children's attitudes before trying more individualized intervention. When individualized intervention was needed, Brown, Odom, & Conroy suggested using four types of individualized interventions which included incidental teaching of social behavior, friendship activities, social integration activities, and explicit teaching of social skills (Brown, Odom, & Conroy, 2001). From there, several program-wide models were created based on the response to intervention model proposed by Fuchs and Fuchs (1998). Those concepts were translated into an early childhood setting by Coleman, Buysse, and Neitzel (2006) in which

they based the response system on the premise that, “parents and teachers can learn to recognize critical early warning signs that a young child may not be learning in an expected manner and to respond in ways that positively affect a child’s early school success” (p.3). Coleman, Buysse, and Neitzel’s response system included four components: (a) an intervention hierarchy; (b) screening, assessment, and ongoing monitoring; (c) research-based curriculum, instruction, and focused interventions; and (d) a collaborative problem-solving process for decision making.

In a more recent study, Steed, Pomerleau, Muscott, and Rohde examined effectiveness of school-wide positive behavior support and interventions across five rural preschool programs which included children aged 3-5. Each participating preschool program engaged in a 3 year process that included on-site training, technical assistance, and coaching support in universal tier PBIS. Two consultants contracted from the New Hampshire Center for Effective Behavioral Interventions and Supports, a statewide technical assistance center provided training to the schools. Participating preschools were also involved in a Response to Intervention (RtI) initiative during the same time period. A separate agency provided RtI technical assistance and coaching support to participating preschool personnel with the goal of improving children's academic outcomes.

The preschool programs implemented a tiered system of service delivery and evaluated progress using three different measures. The measures included: The Preschool-Wide Evaluation Tool (PreSET), Classroom Assessment Scoring System Pre-K (CLASS Pre-K), and Response to Intervention Preschool Leadership Team Checklist (RtI-PLT). Total PreSET scores indicated a 4% increase in implementation from year 1-2 and a 1% increase from year 2-3. CLASS Pre-K scores found an increase of 17% from year 1-2 and a 21% increase from year 2-3. RtI-PLT found

a 34% increase from year 1-2 and an 18% increase from year 2-3 (Steed, Pomerleau, Muscott, & Rohde, 2013).

Although this type of system addressed the varying needs of children in a systematic way, it didn't specifically outline the steps needed in a universal level of intervention, secondary level, and targeted level. One model that incorporates levels with evidence-based practice is The Teaching Pyramid.

### *The Teaching Pyramid*

As described by Fox, Dunlap, Hemmeter, Joseph, and Strain, The Teaching Pyramid Model contains three tiers of intervention that address the needs of all children as well as those who are at-risk. It is recommended that the model be implemented by classroom personnel with the use of behavior or mental health consultants. The development of this model was created under the premise that there is a relationship between a child's social –emotional development, communication, and demonstrated problem behavior. It is assumed that those children who have well-developed social and communication skills are more likely to understand expectations and are also better able to regulate their emotions which result in less problem behavior. It was also assumed that in order to help children develop these skills, professionals in early childhood settings need to have a range of strategies to address the children's needs (Fox et al., 2003). There are four tiers within the Pyramid Model. The bottom two tiers are considered to be universal and applied to all children. The third level is considered to be secondary and address teaching of social skills for some children. Targeted interventions are at the top of the pyramid and needed by a very small percentage of children.

### *Level One: Building Relationships*

Positive relationships need to be built within an early childhood setting between children and adults. Children must have positive relationships with other children as well as adults. The adults working within an early childhood setting must establish positive relationships with children, families, and with each other. These relationships allow for children to feel secure in their environment which fosters the development of social and emotional competence. Once children build relationships they are better able to understand how their behavior can impact others' which gives them a sense of control over their environment (Christenson, 1995; Pinta et al., 2005). It is suggested that adults build relationships with children by getting to know each child individually in identification of their strengths and needs. While getting to know individual children, adults should also develop a professional and supportive working relationship with the families of each child. It is important to develop rapport with parents before a problem occurs so that the family can feel more secure if intervention is needed later (Garrison & Reynolds, 2006). It is also suggested professionals build relationships with families because research suggests that it leads to better social and emotional development in children. When parents learn about social and emotional development of children they are better able to support that development at home. It has been found that the combination of evidence-based teaching of social skills in early childhood settings coupled with the education of families was more effective than only teaching when the children are at school (Webster et al., 2001, 2004). The Teaching Pyramid Model has outlined specific practices based on research which are to be employed to build positive relationships among children and adults.

Specific practices to be put into place include supporting children's play; responding to child conversations; supporting communication attempts of children with special needs; providing praise and encouragement of appropriate behavior; building relationships with children; and building relationships with children, families, and colleagues (Birch & Ladd, 1998; Bodrova & Leong, 1998; Cox, 2005; Howes & Hamilton, 1992; Howes & Smith, 1995; Kontos, 1999; Mill & Ramano-White, 1999; National Research Council, 2001).

With these practices in place for all children, emotional competence can grow as children and families develop trust with the school. Another universal component of the Pyramid Model focuses on creating a positive physical environment that will also support the development of emotional competence.

#### *Level Two: Creating Supportive Environments*

Children are better able to develop social and emotional competence if they feel safe and secure in their environment. When children are provided with clear directions, structured transitions, and opportunities to engage in appropriate behavior they are better able to learn social skills (Sainato, 1990). Research has shown that those preschool classrooms which rated highest in evaluation of the quality of the physical environment showed a greater reduction in problem behavior of children. Not only did the children in the study show less demonstration of negative behavior, they also demonstrated more frequent use of social skills (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002). There are specific components of the environment that have been found to have a positive effect on children. Those environmental characteristics include teacher behaviors, schedules, routines, physical setting, transitions, activity type and size, modifications, adaptations, and behavioral expectations (Mashburn, Pianta, Hamre, Downer,

Barbarin, Bryant et al. 2008; Missal, McConnell, & Cadigan, 2006). These specific components are included in the Pyramid Model and are part of the implementation of the second level of the model. When these elements are implemented and a child is still showing difficulty in developing social competence, they demonstrate a need for more intensive intervention. Secondary intervention of the Pyramid Model focuses on teaching of social skills (Fox et al. 2003).

### *Level Three: Teaching of Social and Emotional Strategies*

Research supports the integration of explicit implementation of peer interaction interventions in early childhood programs. It has been found that positive peer interactions have been linked to enhanced overall child development. Also, it has been found that problems with peer interaction have been predictive of future social competence issues. The National Association for the Education of Young Children and the Division of Early Childhood Council for Exceptional Children have endorsed the use of social competence activities as recommended practice for early childhood criteria (Brown et al. 2001; Mize, 1995). Such skills needed to be successful in development of social and emotional competence include the capacity for children to communicate their emotions, problem solve, continue to try even when tasks appear difficult, control anger, and problem solve. The Teaching Pyramid Model incorporates teaching of such skills into everyday classroom routine (Joseph & Strain, 2003).

There are specific skills which need to be developed in order for teachers to be effective in teaching social skills to young children. Teachers must use a variety of strategies such as introducing and teaching the concept, rehearsing and modeling the concept, prompting children to use the skill in context, role-playing, and providing feedback to children about their use of the



skills (Landy, 2002). The Pyramid Model incorporates strategies for teachers to implement social skills activities into their daily activities (Fox et al., 2002; Fox & Hemmeter, 2009). For children who receive explicit social skills training and still demonstrate behaviors of concern, there is a more intensive form of support available.

#### *Level Four: Individualized Interventions*

The fourth level of the pyramid employs a team approach in development of individualized intervention. A specific plan is developed through functional behavioral assessment to address the needs of the child. Functional behavioral assessment examines the antecedents and consequences which could be maintaining the behavior as well as any medical or environmental factors which could be contributing. Direct observation is completed and data is collected by teachers or other professionals in an attempt to determine a pattern and function of the behavior. Data collected is then used to write an individualized plan which is to be created from evidence-based research and practice. More appropriate replacement behaviors are identified and those behaviors are encouraged through the use of positive reinforcement (Fox et al., 2002; Fox & Hemmeter, 2009).

One concern in implementation of any preventative model is the consistency of implementation of the strategies used and the fidelity of the interventions put into place. When determining what level of support is most appropriate for a child it is imperative that professionals determine if the child has in fact consistently received the less intensive form of support before providing a more intensive level of support that could be more restrictive.

## *Fidelity*

The National Research Center for Learning Disabilities (NRCLD, 2006) recognizes that fidelity of implementation at all levels of a preventative system is essential to positive outcomes for students. Positive student outcomes can be attributed to three factors: fidelity of implementation at the school (program) level; degree to which interventions are empirically supported; and fidelity of implementation at the teacher level. The National Research Center on Learning Disabilities recognizes fidelity at a school level to be systems level change that might include professional development as well as resource allocation in reference to intervention. The key components involved in fidelity of implementation at the teacher level differ depending on the tier of service delivery.

The National Research Center on Learning Disabilities along with Reschly and Gresham (2006), identify ways to keep fidelity manageable for schools when a higher degree of intervention intensity is implemented. There are three dimensions identified as being pivotal to implementation integrity from the secondary level of intervention and beyond. The three dimensions include: the method used; the frequency with which checks are conducted; and support systems which allow for feedback and professional development opportunities needed to implement a process with fidelity.

The Technical Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and the Office of Special Education Programs recognize that fidelity of program implementation is an important component in determining the effectiveness of a positive behavioral support system. They recognize that the expected outcomes of an intervention will not be obtained if the practice is not implemented with integrity (Technical

Assistance Center on Positive Behavioral Interventions and Supports, U.S. Department of Education, and Office of Special Education Programs, 2010). As presented in the Implementation Blueprint and Self-Assessment of School-Wide Positive Behavioral Interventions and Supports and adapted from Sanetti & Kratochwill (2009), there are specific questions that should be examined when determining treatment integrity within a preventative model of behavior. They suggest that stakeholders determine if:

- (1) Interventions are implemented as they were tested by the developers
- (2) Specific components are implemented as recommended and intended
- (3) Practices can be modified after evaluation of local data without affecting the intended outcome.
- (4) There are procedures and/or tools available for evaluating implementation integrity that were created by the developers of the model
- (5) There are ceilings or floors which maximize practice outcomes
- (6) There is a way for participants to receive feedback surrounding implementation on a regular basis
- (7) There are accommodations for context factors such as language, cultural/ethnic customs, community values as suggested by the developer

There have been a variety of studies conducted with the goal of determining the best way to maintain treatment fidelity of interventions within a classroom setting. Results have varied and have used different techniques in the hopes of gaining and maintaining treatment integrity in applied settings. In general, the studies focused on using consultation from a researcher to maintain intervention integrity.

In a study by Witt et al. (1997), teachers received less consultant feedback during post-training baseline as well as during the maintenance phase of the design. During both of those conditions treatment integrity suffered in comparison to when teachers received performance feedback. In another study (Noell, Witt, Lafleur, Mortenson, Ranier, & Freeland, 2000), teachers were given access to a consultant in some form during each phase of implementation with the exception of the implementation of baseline. The intervention included the implementation of a peer tutoring program for students on the part of the teacher. Teacher implementation varied across participants, however, implementation improved with the use of performance feedback for most participants. For most of the participants, the performance feedback phase was the last phase conducted. During performance feedback, the teacher received consultant support daily until reaching 100% implementation and then received it every other day. This demonstrates very little independence by the teachers at the end of the study as they never fully functioned on their own. For one teacher, a follow-up discussion was provided due to lack of consistent implementation. During that phase, the teacher showed improvement, but was not functioning on their own without the use of a consultant. This study examined the number of comprehension questions answered correctly by each student in addition to the measurement of intervention integrity. Results varied across students with all students showing improvement during the implementation of peer tutoring. Two of the five students showed improvement even after the peer tutoring component was no longer in place (Noell et al., 2000).

In a study conducted by Noell, et.al, 2002 three out of four teachers demonstrated that they were capable of implementing the intervention steps with accuracy even after fading of consultant support had occurred. However, the teachers had been given explicit and direct

instruction in the steps of implementation of that particular intervention (a behavior intervention that included student self-monitoring in comparison to teacher monitoring).

It is not known if the teachers would have been capable of designing and implementing steps of any other intervention that could be needed in the future. This study also directly assessed student outcome and found that demonstration of positive student behavior increased and that negative behaviors decreased for all students involved (Noell et al., 2002).

Sterling-Turner, Watson, and Moore (2002) also found that treatment integrity improved with the use of a consultant. They examined different phases of support in which the consultee had access to a consultant in some form throughout the process with the exception of the baseline phase. Results found direct training to be most effective which occurred after the baseline condition. However, the final phase of the study included rehearsal and feedback training. Therefore, the teachers did not demonstrate that they were capable of implementing the steps on their own without the use of a consultant at the end of the study. This study examined the effects of the behavior interventions on student behavior and found the interventions to be effective for all of the students involved (Sterling-Turne et al., 2002).

Another study (Gilbertson, Witt, LaFleur Singletary, & VanDerHeyden, 2007) examined the effects of peer tutoring on demonstration of student mathematics skills. The study was unique in that it used Bug In Ear (BIE) technology to provide immediate feedback to the teachers who were directing the use of the tutoring services. Teachers were explicitly taught the steps to follow in implementing the tutoring program. Step-by-step feedback was provided to the teachers through use of a Voice Actuated Audionic FM Transceiver (VAAT) while they implemented the steps for immediate correction of inaccurate implementation. Feedback was provided by an

outside consultant. During the second phase, the consultant observed the implementation and provided feedback after the lesson and no longer gave immediate feedback. The third phase consisted of the teacher implementing on their own and the consultant monitoring implementation through collection of permanent products. Teachers were then given feedback the following day. The final stage was a maintenance phase in which the teachers no longer received consultant support. Data collected indicated that two of the four teachers maintained implementation integrity during the maintenance phase. The other two teachers required another phase be added to help support their efforts. Response-dependent performance feedback (RDPF) which is feedback given based on the teacher response was then provided to those teachers during their final stage. Results suggested that treatment integrity increased for both sets of teachers once the added support from the consultant was provided. Treatment integrity was maintained during independent implementation for two teachers. However, the teachers were only required to demonstrate their ability to implement one strategy. There is no way of knowing if the teachers had the knowledge to develop and implement other interventions on their own in the future.

Taken as a whole, these studies have shown that consultation and observation are needed to maintain treatment integrity of interventions. In the studies mentioned above a researcher served as the consultant who came in to help in the facilitation of the process. However, in a typical school or early intervention setting there is no researcher, and most observations are performed by members of administration for the purpose of teacher evaluation and not for the purpose of sustaining an intervention. Teacher evaluation models have been criticized (Anderson & Pellicer, 2001; Johnson, Papay, Fiarman, Munger, & Quazilbash, 2010; Munson, 1999; Goldstein, 2003;

Goldstein, 2007; Goldstein & Noguera, 2006; Stedman & Stroot, 1998) because they are often conducted by a member of administration who may not spend time in a classroom setting. The same criticism could also apply to an administrator observing for the purposes of sustaining intervention.

### *Implementation of Program-Wide Models*

Research has found that when school districts have been provided with funding and training they often struggle with the actual implementation of program-wide models. Studies conducted by David and Peterson (1984) and Berman and Gjelten (1983) found that when provided with resources, school districts struggled to implement the new program, determine what training was needed to implement the program, and were unsure how to measure the effects of the program on students. One way of providing support within the infrastructure of a system is the peer coaching model.

### *Peer Coaching*

Peer coaching models were designed to be primarily used between teachers in providing a forum for observation and coaching each other one-on-one in order to improve implementation of teaching practices (Gottesman, 2000). Peer coaching evolved from expert-driven coaching as first described by Cogan. Cogan (1973) conceived coaching as including a pre-observation conference, observation, conference planning, post-observation conference, and process review. Under Cogan's model the coaching included a supervisor observing a teacher throughout the process. It was very time consuming and feedback was often not given on the same day as the observation. Coaching evolved to replace the expert with a peer as a coach and trainer (Bentzen 1974; Devaney & Thorn; 1975, Sharon & Hertz-Lazarowitz, 1982). Joyce and Showers (1983)

originally identified five elements that must be present in order for teacher training to be effective and result in implementation of new practices in the classroom (1983). Those five practices included theory, demonstration, practice, feedback, and coaching.

Theory is the rationale behind the use of the skill or strategy being put into place. It should give an impression of the overall implementation of the practice as well as the relevant research that supports the use of the practice. Theory is very commonly found in training sessions and is sometimes the only element found in training sessions. Demonstration occurs when the trainer models the new skill. Modeling of the skill could happen during the training either before or after the theory is presented. Practice refers to guided practice which occurs in the presence of the trainer. The amount of practice needed depends on the complexity of the new skill. Joyce and Showers found that even simple tasks can require up to 25 repetitions before the skill is mastered during the training. Feedback is the presentation of facts based on data. The person providing the feedback is only supposed to verbalize what they witnessed which would look similar to a play-by-play narrative of what had just occurred in the classroom. The fifth component, coaching, is not done during the training. Coaching is to occur after a training has taken place to allow for transference of skills. When the teacher returned to their classroom and implemented their new skill they received support from a coach who would talk with them about implementation in very factual terms with the use of data collection.

Peer coaching included five steps according to Joyce and Showers (1983). The five steps were:

- (1) The teacher requested a visit from the coach
- (2) The coach visited the classroom



- (3) The coach took notes and wrote down some suggestions to address the area of concern expressed by the teacher.
- (4) The teacher and coach met to discuss the visit right after the observation.
- (5) The coach reviewed the process with the teacher.

Under this model the teacher could request a peer to come into their classroom in order to observe a component they were struggling to implement. They could also request a peer to watch them implement a new strategy. The peer could observe for a very short amount of time and the amount of observation time would have been requested by the teacher who initiated the observation. Because the observation could take place very quickly it could be done daily if needed and could also be done without the need for a substitute or release time. Such an interaction was meant to be informal and function very much like a surgeon sitting in on another doctor's surgery. There was no evaluative component and the feedback revolved around data collection of one particular element which was identified by the teacher initiating the interaction. Therefore, there was no need for the peer observer to pick out which areas were in need of improvement. Feedback was objective and could be described in observable and measureable terms which did not include judgment or opinions of the observer.

Joyce and Showers (1983) examined the transfer of implementation from training to practice. They found that 5% of learners would use their new skill when only theory was used to teach the skill. When theory and demonstration were used it was found that 10% of the participants put the skill into practice. Practice in addition to theory and demonstration resulted in 20% implementation. Feedback in addition to all other components resulted in 25% implementation. When coaching was added to all other components implementation rose to 90%.

Joyce and Showers conducted a study in 1984 which found that the peer coaches were just as effective in implementing program change as the use of an expert consultant. Furthermore, they found that further support provided by an outside expert or a peer resulted in better implementation than only providing in-service trainings with no follow-up consultation or coaching. There were five relevant findings as a result of the studies conducted:

- (1) Coached teachers and un-coached teachers received the same training. It was found that the coached teachers practiced the new strategies more frequently and generated more skills in implementation of the new skills than the un-coached teachers (Showers, 1982).
- (2) Coached teachers used strategies and were able to choose strategies that were more appropriate than un-coached teachers. The coached teachers met with peers to discuss theory and planning and were more likely to try new ideas as a result. Un-coached teachers were more likely to use only the techniques demonstrated during the training sessions (Showers, 1982; 1984).
- (3) The coached teachers retained their knowledge of strategies and were able to generate new and appropriate ideas after a lapse in time. After six to nine months time the coached teachers demonstrated that they could implement the new skills they had been taught earlier and had developed and implemented new strategies. Un-coached teachers were not able to recall the strategies they had been taught and had not generated new ideas (Baker & Showers, 1984).
- (4) Coached teachers were more likely to try a variety of teaching strategies and teach the theory behind the content they were teaching (Baker & Showers, 1984).

(5) Coached teachers were better able to articulate the purpose of the strategies being used than un-coached teachers (Baker & Showers, 1984).

In 1992, Joyce and Showers revised the peer coaching model. To reflect the change in the model, they began referring to it as “peer-coaching study teams.” The newer model omitted the feedback portion from the model as it was found to be counterproductive. Joyce and Showers found that teachers felt they were slipping into an evaluative role during the feedback phase and were uncomfortable with that component. Therefore, in the newer studies they omitted the feedback component. They found that the omission of the feedback component did not depress implementation of the program or impact student results. It was also found that eliminating that step simplified the implementation of the peer-coaching study teams (Joyce et al. 1994). The revision also made the definition of the word ‘coach’ more clear. Peer coaches should be peers who are at the same level. Therefore, the coach should not be a supervisor. As a result, the teacher observing at that point in time is the coach. They were to switch roles on a regular basis. Therefore, one teacher is not considered to be the coach. All teachers who were part of the team were considered to be coaches and they become the coach as soon as they begin to observe (Joyce & Showers, 2002).

Peer coaching is based on constructivist ideas which have evolved from such theorists as Dewey, Vygotsky, and Piaget. Knowledge of adult learning principles are incorporated within peer coaching programs (Barbknecht & Kieffer, 2001). There are four principles associated with facilitation of adult learning as outlined by Moll (1990). The first principle is that learning is socially interactive. In a peer coaching model, the team members communicate with each other and grow together while learning. The second principle is that adult learners bring varied

experiences which can enrich a learning environment. Within a peer coaching model, teachers bring their experiences to the team and use them to grow as a group. The third principle is that adult learners require participation and practice to master new skills. In a peer coaching model, the teacher observing is learning by watching skills modeled by the teacher being observed. The teacher being observed learns by engaging in conversation about skill development and actively planning with a peer. The fourth principle is that adult learners have been shown to benefit from feedback and reflection. A peer coaching model encourages reflection about implementation of skills. The option of providing feedback is available if requested by the teacher being observed (Barbknecht & Kieffer, 2001; Moll, 1990).

The traditional structure of a school system does not often allow for teachers to learn in ways that have been identified as being beneficial to adult learning. The nature of school districts and the way in which teachers are trained has often encouraged teachers to learn on their own rather than in a collaborative effort with other professionals. Peer coaching builds collaboration into the structure of the school system which can lead to better adult learning (Joyce & Showers, 1995).

Current trends in Early Childhood education support the use of coaching. One of the biggest appeals of coaching in an early childhood environment is the ability to tailor teacher training to their specific needs. This specialized training is very highly recommended in the professional development of early childhood educators (National Association for the Education of Young Children, 1993; Sandall, Hemmeter, Smith, & McLean, 2005). There are widespread beliefs that coaching is a more effective way to help teachers bridge the gap from research to practice than a workshop or other form of training that leaves teachers with no help in bridging that gap (Powell, Diamond, & Cockburn, 2013).

### *Effectiveness of Peer Coaching*

According to Kohler, Crilley, Shearer, and Good (1997), research has typically focused on three outcomes to evaluate implementation of peer coaching and its effects. The three outcomes have included measurement of procedural change in teaching strategies or methods; teachers interactions as a coaches as well as their satisfaction in those roles; and student outcomes. Kohler et al. (1997) found that there to be more procedural change with the use of a peer coaching model in comparison to when teachers acted on their own. They also found that peer coaching has lead to more engagement for the students involved in their study. However, they found that teachers were not always certain that the type of instruction they were giving was working.

Although there have been some success stories in relation to the outcomes measured after implementation of peer coaching models, there is criticism that the results are often anecdotal in nature (Murray & Mazur, 2009). Russo (2004) insisted that little data evidenced peer coaching to lead to improved student achievement. Research on the effectiveness of peer coaching is scarce because it is a relatively new form of professional development. Although there has been some evidence that peer coaching is effective in facilitating change which could impact students in a positive way, peer coaching has not been put into practice consistently enough to clearly state that peer coaching is effective in improving student results. There is general lack of research on the effects of peer coaching in relation to student achievement (Murray & Mazur, 2009). It appears as though most studies focus on a few components rather than examination all three components which include change in teaching strategy, teacher interactions, and student outcomes. For example, Murray & Mazur (2009) reported that peer coaching did not result in better mathematics scores for students. However, the study did not examine the implementation

of the teaching strategies discussed during coaching sessions. Therefore, it is hard to determine if the strategies were actually implemented which could have impacted the results of student achievement.

In 1989, Joyce, Murphy, Showers, and Murphy implemented a district-wide school improvement project which was implemented in the hopes of increasing student achievement and improving the workplace for teachers. The entire faculty of the school was organized into peer coaching study teams. They were placed into study teams in the hopes that it would lead to better implementation of alternative teaching strategies. There were three research questions which were answered by the study.

- (1) Did the teachers implement the content they had learned at trainings?
- (2) What factors affected use of the models of teaching techniques taught at the trainings?
- (3) Did changes in the workplace happen as a result of the districts' participation in the project?

One hundred and sixteen teachers and administrators were involved in the study. Eighteen teachers were selected to participate in a subset of the study which was addressed by Joyce, Showers, and Murphy. Teachers were given training on specific teaching techniques which followed the theory/demonstration/practice mode outlined by Joyce & Showers (1988). Study groups then practiced the strategies learned within their study groups. Teachers were asked to log the amount of times they implemented the new techniques over the 1987-1988 school year. The teacher's level of transfer was then calculated.

Levels of transfer include five different stages of implementation. Those five levels include imitative, mechanical use, routine, integrated, and executive control. Imitative use is exact

replication of the skill as it was demonstrated during training. Mechanical use is the second level in which the teacher uses the strategy across content areas rather than implementation in only one content area. Level three is routine in which teachers routinely use different strategies learned in training to enhance their teaching across content areas. Level four is known as ‘integrated use’ which suggests that a teacher implements the new strategies frequently across content areas. The fifth level is executive control which indicates that the teacher understands all concepts surrounding the use of their new skills and are capable of developing new skills based on their knowledge. Teacher’s lesson plans, interviews, and logs of their amount of use of new skills were used to determine the level of transfer.

States of growth were also calculated for each teacher. States of growth examined the teacher’s willingness to continue seeking out learning opportunities. It was measured by structured teacher interview and resulted in classifying the teacher as being Gourmet Omnivores, Active Consumers, and Passive Consumers.

Gourmet omnivores were considered to be individuals who continuously looked for opportunities to improve their skills. Active consumers look for opportunities but are less likely to seek out training opportunities when they are not readily available. Passive consumers are dependent on their immediate social context. They were very unlikely to initiate learning opportunities outside of a school setting unless it was initiated by a family member or friend.

The study was conducted for two years. Results of analysis of teacher logs found that the amount of times the new skills were practiced during the first year of the study averaged 14.48 times per month. During the second year of the study, teachers practiced their new skills an average of 22.73 times per month. For the first year of implementation the mean level of transfer

was 3.3 which was routine use of strategies. In the second year of the project 67% of the teachers had reached a routine or higher level of transfer. Correlations between frequency of practice and level of transfer were calculated using Spearman Rank Correlation Coefficient. During the first year, frequency of practice was correlated with level of transfer at  $r=.62$  and at  $r=.75$  during the second year of the study. It was found that no teacher reached a high level of transfer without frequent practice. Results indicated that more frequent practice led to a higher level of transfer. The study also examined some student results. When examining student results of the Iowa Test of Basic Skills, forty of the 72 scores reflected gains of between two and four months.

A study conducted by Kohler, McCullough, and Buchan (1995) examined the implementation of a peer coaching model within a preschool setting. Four teachers participated in the study. Teachers were asked to pick a particular skill to work on within their classroom. During the first phase of the study teachers were asked to implement that specific skill on their own. During the second phase teachers worked together in dyads and acted as peer coaches while also completing a self-assessment of their implementation steps. The third phase was maintenance, in which teachers went back to working on their own. The researchers examined implementation of the steps through video recording. Results of the study found that all four teachers made some procedural changes during the study without any influence from the researcher. Three teachers demonstrated more change in implementation during the coaching phase of the treatment. Those three teachers maintained the changes throughout the maintenance phase of the study. One teacher showed the same demonstration of implementation steps throughout the duration of the study phases. The researchers also found direct correlations between changes in the teachers' behavior and that of the children. For example, one teacher



chose to take steps to elicit more responses from children through more frequent questioning. As a result, children communicated with their teachers more frequently (Kohler et al., 1995).

A study conducted by Kohler, Crilley, and Shearer (2001) found similar results with a slightly different approach. Four regular elementary school teachers participated in the study. They were asked to choose specific content to be taught. From there, the teachers were provided with training in a direct-instruction model of teaching where teachers were instructed in specific steps to implement when teaching their content. A checklist of implementation steps for each content area was created. The biggest difference in this study was that a fifth participant was an author of the study who also acted as a coach. Therefore, the teachers had the support of a peer coach who was not a permanent employee within the district, but was considered to be a peer as the researcher had many years of teaching experience. During baseline all teachers implemented the steps on their own. The teachers then participated in seven sessions in which they implemented the techniques in the classroom while the coach came into the room to help encourage the children to participate in reciprocal learning which was a component of the direct instruction program. After the lesson, the teacher met with the coach to discuss aspects of the lesson. The third phase was identical to the baseline condition. The number of steps implemented by the teachers were calculated during each phase. Researchers found that teachers implemented more components during the coaching sessions than were implemented during the baseline condition and they maintained that implementation throughout the last phase of maintenance treatment (Kohler, Crilley, & Shearer, 2001).

Research conducted by Thompson, Marchant, Anderson, Prater, and Gibb (2011) used a Response to Intervention Model to change adult learning rather than child learning. In the study,

there were three levels of intervention used to attempt to increase the use of specific positive praise in elementary school classrooms. Level one was school-wide training on the use of specific positive praise in the classroom. Level two was the use of video recording and self-monitoring of teacher performance. Level three was the use of peer coaching to increase teacher use of specific positive praise. The study took place across three elementary schools and across three teachers and classrooms. A likert scale was developed by the researchers and direct observation was conducted by three trained observers. Results across two of three participants found peer coaching to increase use of specific positive praise as well as child academic engagement more than general training or video self-monitoring. Specifically, Teacher One showed 0 praise during baseline, a frequency of 0.2 during general training, a frequency of 1.1 during video self-monitoring, and a frequency of 2.6 during use of peer coaching. Teacher Two showed 0 praise during baseline, 0.3 during general training, and 8.6 during video-self monitoring. Because teacher two showed such progress with video self-monitoring, they didn't move her onto peer coaching at all. Teacher Three showed a frequency of .44 during baseline, 1.14 during video self-monitoring, and 5.2 during peer coaching (Thompson, Marchant, Anderson, Prater, & Gibb, 2012).

#### *Application of Research to the Current Study*

Preventative models of service delivery have been found to be effective in reducing behaviors of concern. Such models have also been shown to increase use of pro-social behaviors in students through school wide positive behavior support. School-wide positive behavior support has been put into place within early childhood settings to address the needs of children who are infants to age five. One such model is the Pyramid Model.

There are many components involved in the implementation of the Pyramid Model. Many of the components require teachers to implement specific skills to ensure student growth. Research suggests that implementation of a program or set of skills often requires the use of a researcher or consultant to facilitate the process.

Research has shown that peer coaching has been found to be effective in facilitating intervention implementation and maintaining integrity in isolated studies. Peer coaching offers a chance for collaboration among teachers which could continue without the use of a consultant. Traditional consultation models require the use of a consultant to maintain the fidelity of the program. In an applied setting a consultant may not be readily available at all times. Therefore, this study seeks to determine if use of peer coaching will result in better implementation of the Pyramid Model than use of more traditional consultation techniques. A peer coaching model would provide a way to improve fidelity while also encouraging collaboration and consultation about intervention among teachers. The peer coaching model would help teachers to instruct effectively through a collaborative process that would lead to better treatment integrity.

#### *Research Questions and Hypothesis*

The current research sought to determine the following:

- (3) Does use of a peer coaching model lead to increase of fidelity of implementation of the Teaching Pyramid Model?
- (4) Is a trainer needed to guide the peer coaching model after it has been put into effect?

The current researcher hypothesized that implementation fidelity of the Pyramid Model will improve by implementing a peer coaching model. The hypothesis is that a peer coaching model will improve the implementation of the program without continued presence of a trainer.

### **Chapter III: Methods**

#### *Participants*

The study was conducted in four rural preschool classrooms. The four classrooms were novice classrooms to 1 of 4 preschool Centers that serve the needs of a rural county in Central Pennsylvania. Center (Table 1). The organization had a total of 42 classrooms, 20 of which were preschool rooms. Each classroom participating in the study had a lead teacher and assistant teacher. Lead teachers and assistant teachers were asked to participate in the study to determine the effectiveness of a peer coaching consultation model in an attempt to help sustain the implementation of an evidence-based positive behavioral support model. Informed consent was obtained in the form of a research agreement between the researcher and the teachers (Appendix C). The researcher has a dual role as a trainer and will be referred to as a trainer throughout the rest of the study.

#### *Further description of participants*

##### *Lead Teachers*

Each preschool classroom had a lead teacher who had a bachelor's degree in early childhood education. They have been described as lead teachers because they are required to have a bachelor's degree in early childhood education. Assistant teachers are required have at least a Child Development Associate's Degree (CDA). In this study, two assistant teachers had a CDA and two had a Bachelor's degree in elementary education. Each teacher had differing amounts of experience in the field which is outlined in table 1.

### *Assistant Teachers*

Assistant teachers worked in each classroom with the lead teachers. They were responsible for helping lead teachers carry out lesson plans and they worked directly with children. They had less responsibility in the preparation of lessons. However, they implemented academic support as directed by the lead teacher. Assistant teachers had more responsibility in redirection of behaviors of concern in the classroom while the lead teacher took on more responsibility in relation to curriculum implementation.

### *Trainer*

The researcher is also a participant in the study. For the purposes of this study the researcher will be referred to as a trainer. Primary responsibilities of the trainer included the following: direct modeling of new skills for teachers, providing feedback to teachers about implementation, facilitation of data collection, observation of teachers with the TPOTS, training teachers about the Teaching Pyramid Model, providing pieces of the Inventory of Practices for teachers to choose topics, providing information or articles when appropriate, and facilitating peer coaching by providing a shared plan time, and teaching about peer coaching.

The trainer held a master's and certificate of advanced study in school psychology as well as bachelor's degree in special education. The trainer was completing the study in an attempt to help implement and sustain the Teaching Pyramid Model as well as to complete partial fulfillment of a doctoral degree in school psychology through a dissertation study.

### *Quality Control Rater*

The quality control rater was a full-time employee of the preschool in which the study was being conducted. For the purpose of this study they were referred to as a rater. They worked in

the preschool five days per week and had a bachelor's degree in early childhood education and 10 years of teaching experience. At the time of the study, they were in process of completing a master's degree in education. The quality control rater helped to facilitate the use of an evidence-based social skills curriculum in each of the preschool classrooms (PATHS preschool curriculum). This curriculum was implemented in every classroom in the Center. Because these were new classrooms to the preschool, at the time of the study the rater had not been working in the classroom or with the teachers. The sole responsibility of the quality control rater was to rate the TPOTS rating scales by viewing video footage in order to determine inter-rater reliability with the ratings of the trainer. This rater was trained to use the TPOTS rating form through the online training developed by the creators of the tool (University of South Florida, 2010). At the time of the study, the rater and the trainer had been rating together with the TPOTS in other classrooms for over a year.

#### *Description of the classrooms*

The classrooms were funded through a "Pre-K Counts" program. Pre-K Counts was established by The Pennsylvania Department of Education to help children who are considered to be 'at-risk' for academic failure. Therefore, families meeting certain criteria receive funding from the state for their children to attend preschool. The following criteria were established by the Pennsylvania Department of Education to determine if a family will receive funding:

- The child must be three years old for initial eligibility and can continue until they are of school age.
- The child is at-risk for school failure because of family income, English is a second language, cultural needs, or special needs. Income requirements include specifications

that the family meet the criteria of 300% of the 2009 poverty level, or a family of four earning \$66,150 dollars or less per year (Pennsylvania Department of Education, 2010).

Research suggests that children who come from lower income families are at greater risk for being malnourished, exhibiting conduct problems, and showing more difficulty acquiring academic skills (Alaimo, Olson, Frongillo, & Briefel, 2001; Caldas & Bankston, 1997; Schonberg & Shaw, 2007). Therefore, the classrooms participating in the study had children who could demonstrate greater need than the general population.

### *Instruments*

#### *The Teaching Pyramid Observation Tool (TPOTS)*

The Teaching Pyramid Observation Tool (TPOTS) for Preschool Classrooms was created to measure the implementation fidelity of the Pyramid Model for classrooms serving children ages 3-5 (Fox & Hemmeter, 2009). Therefore, the TPOTS is an outcome measure for the study which seeks to determine the fidelity of implementation of the Pyramid Model. At the time of the study, the TPOTS was still in a research edition. Since implementation, the tool has been published after undergoing a pilot study which found the TPOTS to be an accurate measure of fidelity of implementation of the Pyramid Model by comparing it to other measures of fidelity that assessed similar classroom skills (Snyder, Hemmeter, Fox, & Miller, 2013).

Observations with the TPOTS were required to take place for a minimum of two hours and the observation took place during at least one teacher-directed activity and child initiated free time. TPOTS contains three types of items: those that examine universal components of the program, secondary components, and targeted components. The TPOTS also examines 'red flag' items that evaluate teacher training and interaction with children. All items were rated yes/no

based on observation. More specifically, the raters used event recording to indicate if a particular skill was demonstrated by the teacher during the time observed. The event is recorded by choosing either yes or no to indicate if the event was observed.

For the purposes of the study, progress is reported in the percentage of steps implemented under each category assessed. The universal items evaluate environmental components such as clear boundaries, ability to move easily around the room, lack of large open spaces, adequate number of center materials to support play, preparation of centers, and classroom rules. They also include building positive relationships with children such as teacher's engagement in supportive conversations with children, promoting children's engagement, teaching children behavior expectations, and providing directions.

The secondary items examined social and emotional teaching strategies such as teaching self-regulation, identifying and expressing emotions, identifying ways to handle anger, teaching of social problem solving, and teaching of ways to build friendship skills and interact with peers.

Targeted skills include convening with a team to develop interventions, collecting data to further examine the problem, developing intervention plans, implementing individual plans, and involvement of family members in the process.

The TPOTS specifies the items which assess each level of the Pyramid. For the purposes of this study, the percentage of overall components rated yes were graphed to represent the fidelity of implementation of the Pyramid Model overall. The researcher obtained permission to use this instrument in the form of a research agreement completed with the authors (appendix B).



### *The Inventory of Practices*

The Inventory of Practices for Promoting Children's Social Emotional Competence (Appendix G) is a tool that was created by The Center on the Social and Emotional Foundations for Early Learning (CSEFEL) for the purposes of planning and self-monitoring. This tool was used by the teacher dyads to help monitor their own progress and the progress of the program implementation. Therefore, this is not an outcome measure for the study. Rather, it is a tool to be used in the implementation of the study.

This instrument provided teachers with a list of specific skills associated with implementing the Pyramid Model. It addressed every level of Pyramid implementation at a universal, secondary, and targeted level. Such universal skills include developing meaningful relationships, encouraging teachers to examine their own views, examining cultural influences, and examining family influence, designing the physical environment, developing schedules and routines, ensuring smooth transitions, designing activities, giving directions, establishing clear rules and expectations, using positive feedback, etc. Secondary characteristics examine the teaching of social skills while the targeted skills examine intervention implementation for specific children. This tool allowed teachers to see a list of specific actions they needed to employ when implementing the broader categories listed above. It is set up in such a way that teachers can monitor their own growth in those areas by checking how often they perform the action described. From there, they could choose certain areas to target for training. It also allowed teachers to record strategies they would like to try in an attempt to perform specific skills more often.

### *Raters*

There were two raters who served as the observers of the implementation of the Pyramid model. The rater's role and function was to observe implementation of the model while rating with the TPOTS. However, one rater also served as trainer and researcher during the study. Because these were new preschool classrooms, the raters only contact with the teachers was outlined in the parameters of this study.

### *Training of Raters of the TPOTS*

Raters were trained to use the TPOTS observation system through a webinar prepared by the authors of the TPOTS (University of South Florida). Raters performed each observation together in order to obtain inter-rater reliability (see table 2). Raters worked together to obtain inter-rater reliability of at least 90% agreement as calculated through occurrence of agreement. Although this was the first time the observers had done observation for the purposes of a study, they had been rating together using this scale in other classrooms for well over a year at the time of the study. Therefore, raters had adequate practice using the measure. A calculation of occurrence agreement was completed by taking the total number of agreements and dividing it by the sum of the total number of agreements and disagreements. That number was then multiplied by 100 to get an occurrence of agreement (House, House, & Campbell, 1981). Each rating scale had a total of 141 questions that were rated as yes or no. Those questions were used to determine if the raters agreed or disagreed on each item. There were four classrooms. There were a total of nine observations conducted for each classroom (3 during each phase of the study). Therefore, there were a total of 36 observations. Across 36 observations, percentage of agreement ranged from 91.48%-100% agreement across raters.

## *Variables*

### *Independent Variables*

Independent variables were the types of support provided. Two classrooms received training and peer coaching and the other two received no training or peer coaching. These four classrooms were chosen because they were new to the preschool program and had not participated in intervention before. When the teachers met with the trainer to sign research agreements, there were covers on the agreements that all looked the same. The teachers chose their own seats where the agreements were already placed. When they turned the page, some were experimental agreements and some were control agreements. The experimental classrooms are referred to as Classroom One and Classroom Two. The control classrooms are referred to as Classroom Three and Classroom Four. The effectiveness of training and peer coaching were evaluated through TPOTS observations.

### *Dependent Variables*

The fidelity of the implementation of the program as measured by the Teaching Pyramid Observation System (TPOTS) is one dependent variable. The TPOTS was used to determine level of program implementation across phases of the study. Therefore, it was used to assess if teachers implemented more program steps with use of the peer coaching model than with no peer coaching model.

Another dependent variable is the number of meetings conducted during peer coaching. The permanent products produced during the meetings were analyzed to ensure that teachers continued to meet even after the trainer was no longer involved in the process. Permanent

products are the forms completed by the teacher teams each week which describe the skills worked upon (Appendix G).

### *Procedures*

#### *General Description of each Classroom at Baseline*

##### *Classroom One*

The lead teacher in Classroom One was a male and held a Bachelor's Degree in Early Childhood and Elementary Education. Before coming to the current classroom he had a long-term sub position with a local school district teaching Kindergarten. He had two years of experience. He was also the father of two children. The assistant teacher was female and had a Child Development Associates degree and was several credits shy of finishing a bachelor's degree in Early Childhood Education. She had several different positions within the preschool organization but was new to this classroom and this position. She had three years of experience. She did not have children of her own. The teachers were very close in age and described themselves as "The Dream Team" because they often reported to various people within the building how much fun they had at work on a daily basis. When they were presented with the research agreement, they joked with the researcher that they expected pizza in addition to what was promised on the paper. They were very disappointed to find out that pizza was not part of the research agreement. The lead teacher in Classroom One also asked if he would be allowed to see the video footage of his classroom after the study was complete. He was very interested in what he could learn from that. The trainer agreed to allow it at the conclusion of the study.

During baseline collection, they received no support from the trainer. The only time they contacted the trainer was when the video camera was accidentally knocked off the wall. It had

landed in the garbage and they had no clue how to set it up again. They also called to let the trainer know that a fire drill happened and they were worried that the camera may have captured an empty room for a good 15 minutes. They were very aware of the video camera as they had never been recorded before.

### *Classroom Two*

The lead teacher in Classroom Two was female and had one year of classroom experience. She had been substituting with a local school district before becoming the lead teacher of the preschool classroom. She had a bachelor's degree in Early Childhood Education. She did not have any children of her own. Her assistant teacher had 15 years of early childhood experience working in various classrooms and positions within the organization. She held an associate's degree in child development. She had children and grandchildren of her own.

When approached with the research agreement they asked questions like, "Will anyone else within the organization view the video footage?" They seemed a bit nervous about being recorded, but they agreed to participate. During the baseline condition of the study, they carried on with their day as usual and received no support from the trainer. The only difference was the camera in the classroom, which was new to the teachers.

### *Classroom Three*

The lead teacher in Classroom Three was female and had three years of teaching experience. She had a bachelor's degree in Early Childhood Education and was completing a master's degree in Special Education. She had been substituting with a local school district before coming to the classroom. She had children of her own. Her assistant teacher was male and had 10 years of teaching experience. He had a bachelor's degree in Elementary Education. He

held various job positions before the assistant position in Classroom Three. He implemented reading intervention for a local school district for several years. He first came to the preschool to help implement screening tools for the preschool. He then moved into an assistant position. He had children of his own.

When approached with the research agreement, they said, “We don’t do anything different, you just record us?” Being a control classroom, they didn’t seem at all concerned about participating in the study. The lead teacher of Classroom Three did mention that she was doing some research herself and that she found it very interesting. They received no support from the trainer during baseline which was true for the remainder of the study as well.

#### *Classroom Four*

The lead teacher in Classroom Four was female, had a Bachelor’s Degree in Early Childhood Education, and three years of teaching experience. She held other positions within the Preschool before becoming the lead teacher of this classroom. She had a child of her own. The assistant teacher was female, had a bachelor’s degree in Elementary Education, and two years of teaching experience with the local school district. She did not have children of her own.

Similar to Classroom Three, they said, “If all I have to do is teach, I’m in.” “I’m not crazy about being on camera, but I’ll do it.” They received no support from the trainer during baseline or any other portion of the study.

The location of Classroom Four is worth noting. Classroom Four was located on the second floor of the building and was the only preschool classroom on that floor. It was completely isolated from the other classrooms participating in the study. The other three classrooms were all on the first floor and located in the same hallway.

*Phase A:*

During baseline teachers received no specific classroom support from the trainer. Each classroom was observed three times. Baseline data took 2-3 weeks to complete. Observation took place at the end of January through the use of video cameras. There were four classrooms observed three times each for a total of 12 classroom observations for baseline. The trainer and the rater evaluated implementation through TPOTS scoring for each classroom.

*Phase B:*

Training began in February. During the training phase of the study, the teacher and the assistant met with the trainer once per week for ½ hour sessions for three weeks. The trainer read the standard protocol to the teachers (see appendix F). Then, teachers were given modified versions of the Inventory of Practices which allowed them to select specific areas of focus and record their progress in the classroom (see appendix F). After picking the area of focus, they were offered training. The teachers were being trained in two ways. First, the process of meeting in a teacher dyads to complete the Inventory of Practices was modeled (the peer coaching component). Then, the strategy chosen to meet the identified need discussed by the dyad was implemented with trainer support. Modeling was also done in the classroom over the course of the three weeks if the intervention chosen required such modeling. This phase of the study lasted three weeks. Four classrooms were observed three times each for a total of 12 observations conducted during the training phase. A detailed description of the training phase can be found in table 4.

## *General Description of Each Classroom during the Training Phase*

### *Classroom One*

The teachers in Classroom One chose to focus on Building Relationships during their first meeting which included the teachers and the trainer. When they examined the items from the Inventory of Practices which went with that category, they chose to focus on increasing the use of specific positive praise in the classroom. When the lead teacher suggested using a cowbell to celebrate the use of positive praise in the classroom for children and for teachers the assistant teacher looked a bit nervous, but agreed to try it. They also decided to try and make better connections with the parents in their classroom. They realized that they could not recall the names of many of the parents in the room. The meeting focused on the logistics of bringing in the materials for the cowbell as well as how it should be presented to the children. In general, they seemed very excited about the project.

After the implementation of the bell, the teachers relaxed. The children were responsive and only rang the bell when they heard compliments and positive praise used in the classroom. The teachers were very excited about the feedback they were getting from adults entering the building. Several people were touring the building one day and the teachers wrote in their meeting form, “Adults like the bell as much as the children. Strangers touring the Center wanted to know about the bell and seemed to really love the positive feel of the classroom.” “We are really excited that the children are responsive and not overusing the bell.” “It helps us to remember our goals in using more consistent positive praise and in building relationships with children and parents.” “Parents love it, the kids talk about not only the bell but the kind things that were said in the classroom.”



By the time the training phase was ending, the teachers felt they were consistently using the skills outlined in their section of the Inventory of Practices. They decided to start to shift their focus to physical classroom environment.

### *Classroom Two*

The first meeting with the teachers in Classroom Two was extremely intense. They had major concerns for one particular child in the classroom and they very quickly chose to work on items at the top of the pyramid model in order to address the needs of that one child. They also chose to learn about autonomy in the hopes that it would help them to understand the child. The first meeting with the trainer focused on naming the concerns for the child which included some very intensive behaviors such as standing on tables, hitting, kicking, and noncompliance. Teachers reported, “We need to find something that works for her before she hurts someone.” The feeling of the meeting was very tense. The behaviors were so extreme that the trainer suggested a behavior plan right away. Teachers identified transitions to be the major challenge for the child, so a plan was written to address transitions, identification of feeling, and visual prompts of directions. More details about that plan are located in table 4. Teachers were worried about implementing the plan. “Which one of us should do the plan?” “Who will make the plan?” “How will we contact the parents?”

The trainer agreed to model the plan for the teachers the next day as well as help to create the materials and talk with the family at pick-up time and get them to sign permission for the plan. The teachers seemed to relax knowing that they would have support. The next day the trainer went into the classroom and modeled the plan for the teachers for two hours. The trainer started out modeling and then the assistant practiced using the plan while the trainer watched.

The lead teacher didn't have as much practice with the plan because her teaching duties were very distracting during the modeling. She was shown how and when to use the plan and was made familiar with materials, but she implemented the parts of the plan fewer times that day than the assistant teacher. The teachers were then left to implement the plan on their own the following day. They were given the option of calling the trainer back into the classroom if needed. They did not call the trainer back into the classroom again.

During the next meeting with the trainer, the teacher team was very unhappy. They reported that the child was responsive to the plan, they were seeing a reduction in behaviors. However, the lead teacher shared anger toward the assistant. She reported, "It just doesn't seem like you do all the steps. Sometimes you forget. I can't monitor it all of the time. I need more help from you." The assistant took offense. She said, "I'm the only one working on the plan. I have the hard job. I'm the one handling the behaviors." "I'd like to see you do it." Emotions were high. One of the teachers was crying and the other was yelling.

The trainer realized that more modeling would not work for the team. There were several problems with the modeling under those circumstances. The first problem was that because the teacher's perception was that the other teacher was not doing it correctly, watching the trainer may actually make them feel even worse about their skills if either teacher viewed the trainer as more capable of implementation than the other teacher. Another problem with modeling was that the lead teacher was always too busy in the classroom to really practice the skills while the trainer was there. A third problem with the modeling was that it interrupted the flow of the classroom. The trainer was an extra person intervening with a child who had trouble with changes. A fourth problem was that if the trainer corrected one teacher in front of the other it

would be embarrassing to the corrected teacher. Because of those reasons, the trainer offered a different approach.

The trainer offered to use “bug-in-ear” coaching to guide the teachers in their interaction with the child and the steps of the behavior plan. That would remove the trainer from direct interaction with the child as well remove any comparison of teacher skills in implementation to the trainer’s skills. The technology used within the Center to do that type of consultation was not elaborate. There was a set of walkie talkies. The teacher’s radio has an earpiece attached and the radio clipped onto the teacher’s belt. The trainer’s radio had nothing attached. The trainer just talked into the radio and the teachers heard it in their ear. The trainer situated right under the camera so that vocalizations could be heard on the recording while teacher’s reactions to the directions were recorded. The teachers were each coached for an hour with the bug-in-ear. The trainer made corrections in the teacher’s technique but their colleague could not hear when the teacher was corrected in the process.

The next meeting went much better. Both teachers reported, “I forgot some of the steps, and the bug-in-ear helped me remember.” “I think we have it now.” “It’s not hard to do. “ “It seems to be working.” “I think there is another child who could use a plan now.” There was no focus on the skills of the other teacher in the room. It appeared to be resolved.

The teachers in Classroom Two began to talk about implementation of another plan in the classroom for another child toward the end of the training as well as continuing to learn about autonomy and the role that played in child behavior, but they did not mention working on other skills from the Inventory of Practices.

### *Classroom Three*

They continued to be in baseline. Teachers did not request help in their classroom at any point in time. The location of Classroom Three was right across the hall from Classroom One. The trainer didn't know it at the time of the study, but the children in Classroom Three were very curious about the bell that they sometimes heard across the hall and they spoke to the children of Classroom One about the bell and also shared that information with their teacher.

### *Classroom Four*

The classroom continued in baseline. No help was requested from the trainer and the class was isolated from the other classrooms.

### *Phase C, Peer Coaching Model:*

Implementation of peer coaching was monitored through permanent products collected during dyad (the lead teacher and the assistant teacher) meetings which occurred weekly. The dyads met to discuss their implementation of the Pyramid Model in their classrooms and developed a specific plan around implementation of those aspects which needed improvement. That plan was then signed by the teacher dyads and given to the trainer to ensure that the teachers were in fact meeting. This phase of the study happened at the end of February into the middle of March.

### *Operational Procedures of the Peer Coaching Model*

Teachers used self-monitoring and monitoring of each other through The Inventory of Practices (see table 5). Each Monday the Lead Teacher and Assistant Teacher from each room picked a section of the Inventory of Practices to work on that week. Teachers decided which components to begin working on in their classrooms. The components chosen were specified

during weekly meetings. Teacher dyads were composed of the lead and assistant teacher of each classroom. The lead and assistant teacher worked in the classroom together and had common goals in implementation of the Pyramid Model. Each teacher dyad examined the specific steps associated with implementation of the skill chosen. They were encouraged to observe each other using the skills and talk with each other about strengths and needs. It was stressed that although they were watching how the skill was implemented in the classroom, the dyads were not to evaluate each other. It was much more a matter of helping each other determine which areas needed to be worked upon. Teachers came to a consensus about the consistency of their implementation and completed the form together. Every week the teachers were then given a shared plan time to discuss what they found throughout the week. At that meeting the teachers completed a form about what they found throughout the week and ideas of how to improve their implementation in the classroom. Teachers were encouraged to work on that skill the following week and monitor how they were doing. When and if they were able to implement each component of the skill consistently they were to move onto another skill area. A detailed description of peer coaching and permanent products can be found in table 5.

#### *General Description of Each Classroom during Peer Coaching*

##### *Classroom One*

Classroom One chose to begin working on the physical environmental components of their classroom during their peer coaching phase. The trainer did not participate in those conversations, but quotes from permanent products indicated the following: “We picked an odd time to work on environment. We just built a huge igloo out of milk jugs and put it in the middle of our room.” “The igloo in combination with trying to meet TPOTS criteria as well as

Environmental Rating Scale criteria is proving to be challenging.” “We decided to prioritize the environmental components we want to tackle first. Trying to do them all at once is not working.” “The bell is super awesome. The kids still really like it and are sticking to the rules about when to use it. It feels good in the room.” “We wish we had more time to meet. Not only do we need more time to meet, we also need time to rearrange our room and make some of the changes needed to the space, I wonder if we will ever get the time we need.”

Teachers completed the permanent products on their own and returned them to the researcher. They slowly worked on the environmental components during that time. One of the reasons that their TPOTS scores may not have shown as much improvement during that time is that there are not many items on the TPOTS scale that directly relate to the environment. There are many more items pertaining to relationship and interaction. Therefore, it might not look like as much growth during that time partially because of the number of items pertaining to the type of intervention being focused upon.

### *Classroom Two*

Teachers in Classroom Two continued to focus on individualized interventions during this phase of the study. The trainer did not participate in the meetings, but permanent products were turned into the trainer. Because the teachers had such a difficult relationship, the trainer reminded them that in an emergency, they can have support. The teachers did not contact the trainer at all during the peer coaching phase of the study.

According to permanent products, some of the information from the teachers was as follows: “Continue to use the plan we made for our child. It seems to be working except that she won’t identify her emotions with pictures anymore. Maybe that is because she is talking more.”

“We need to continue to give our child positive praise when she does the right thing.” “We are creating another behavior plan for another child. He is too loud and screams often.” “We looked on the CSEFEL website that supports TPOTS. We found a voice volume chart, we would like to try it with him. We would also like to use the problem solving tool kit, but we are not sure how to teach the children about it.” “Haven’t been able to try the voice volume chart. The child has been absent all week.” “Continue to work on team work. We both need to keep implementing the plan for it to work.” “Our time together is not long enough. We need more time to work out all of the things we need to figure out for these children.”

#### *Classroom Three*

The classroom stayed in baseline. No trainer support was given. Teachers did not participate in peer coaching.

#### *Classroom Four*

The classroom stayed in baseline. No trainer support was given. Teachers did not participate in peer coaching.

## **Chapter IV: Results**

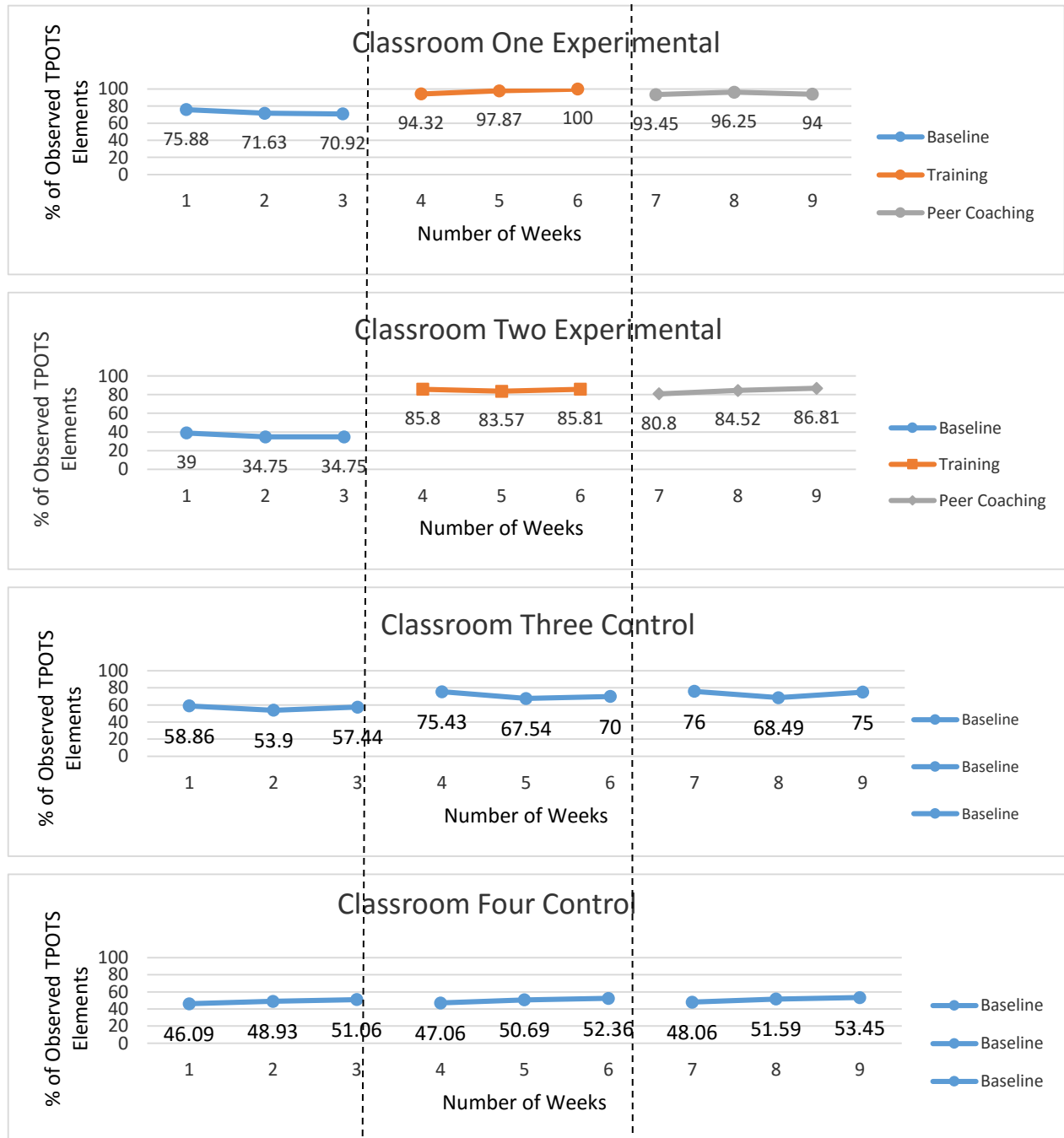
### *Design*

An A-B-C design was used to examine the effects of training and peer coaching on the implementation of the Pyramid Model with two experimental classrooms and two control classrooms. To control for internal and external validity, the conditions were replicated across similar participants and were compared to two control groups. Because two of the classrooms stayed in baseline condition throughout the course of the study, it is truly a multiple baseline design. Because comparisons were made which allowed for treatment to be given to experimental classrooms at the same time that the control classrooms filled that same time period, the process provided internal validity (Campbell & Stanley, 1963). The A-B-C design was chosen because it met the needs of the study. The study hoped to determine the development of new technical skills among participants and to refine use of techniques in an applied setting (Gast, 2010). The data is represented in percentage of items implemented on the TPOTS (see Figure 1).



Figure 1

*TPOTS Data from Experimental and Control Classrooms*



\* 100% is a perfect TPOTS score.

### *Analysis of Visual Results*

#### *Was there trend stability?*

Data was analyzed on a consistent and frequent basis to determine when it was appropriate to move to the next phase of the study. When determining if it was appropriate to move to the next phase of the study, the researcher collected 3 data points and analyzed them for level of stability, trend stability, and contratherapeutic trend direction before moving onto the next step (Gast, 2010).

#### *Calculating Stability*

Stability is the range in data point values in a data series. When the range of value is small, the data is considered to be stable. If 80% of the data points of a condition fall within a 20% range of the median level of all the data points in a condition, the data is considered to be stable (Gast, 2010). All data points fell within 20% range of the median level within a condition.

### *Statistical Analysis*

#### *What was the magnitude of difference in TPOTS scores across phases and interventions in the study?*

Means and standard deviations for each classroom and each phase can be found in Table 2. Effect size was calculated to determine if the changes made throughout phases of the study made a change in the implementation of the Pyramid Model as measured by TPOTS results. Cohen's  $d$  was calculated to determine effect size. It allows the researcher to describe the standardized mean difference of an effect. Specifically, when comparing phases of the study, the difference of

the two means between each phase was obtained and then divided by the standard deviation (Becker, 2015; Laken, 2013). Table 6 presents the effect sizes over phases of the study.

In both experimental classrooms, large improvements were found when comparing all phases of the study with the exception of the comparison between training (B) and peer coaching (C) for classroom two.

More specifically, experimental Classroom One had a large improvement during two phases of the study; phase A (baseline)-B (training) (Cohen's  $d=8.85$ ); and phase A (baseline) to phase C (peer coaching) (Cohen's  $d= 10.03$ ). The training to peer coaching comparison for Classroom One actually showed a decrease in TPOTS scores from training to peer coaching. Although Classroom One made significant progress from baseline to peer coaching, results indicate they made less progress during the peer coaching phase of the study. Therefore, Classroom One made more progress toward implementing skills outlined in the TPOTS when they had training in place.

Experimental Classroom Two also showed a large improvement when comparing phase A-B (Cohen's  $d= 24.94$ ) and phase A-C (Cohen's  $d= 17.35$ ). From phase B-C, Classroom Two showed a very small decrease in their overall scores (Cohen's  $d= 0.43$ ). These results suggest that experimental classroom two made significant progress when comparing baseline to training, and maintained their skills during the peer coaching phase of the study. The hypothesis of the study was that teachers would maintain or increase their TPOTS scores during the peer coaching phase when compared to the coaching phase. These results suggest that one experimental classroom showed a slight decrease in TPOTS scores during the peer coaching phase and the other maintained their TPTOS scores.

The control classrooms received no training during the treatment phases of the study, but they continued to be observed to determine if the changes in TPOTS scores were correlated to treatment phases or were just fluctuating due completely to chance. One control classroom (Classroom Three) had results that indicated a very similar pattern to the experimental classrooms. Classroom Three showed large improvements in scores with the exception of the B to C phase of the study where there was a small improvement. More specifically, classroom three had the following results: A-B (Cohen's  $d = 4.22$ ), B-C (Cohen's  $d = 0.43$ ), A-C (Cohen's  $d = 4.83$ ). These results suggest that classroom three showed an increase in TPOTS scores at the same times as the experimental classrooms. These results suggest some type of outside influence made a change in classroom practice as classroom three received no training. The other control classroom (Classroom Four) showed very little change throughout the phases of the study with small to moderate effects. More specifically, Classroom Four showed the following effect sizes during the phases of the study: A-B (Cohen's  $d = 0.36$ ), B-C (Cohen's  $d = 0.36$ ), A-C (Cohen's  $d = 0.89$ ). All four classrooms showed an overall large effect size when examining the total effect size of the study.

When trying to determine why Classroom Three showed similar results to the experimental classrooms, there are many factors to consider. One factor is the location of the classroom. Classroom Three was located across the hall from Experimental Classroom One and one classroom down from Experimental Classroom Two, while the other control classroom (Classroom 4) was located upstairs and far away from experimental classrooms. Classroom One placed a cowbell in their room as a form of intervention during the study. It is very possible that Classroom Three was influenced by the ringing of the bell in Classroom One. After the

completion of the study, the teacher in classroom three told the researcher that several children from classroom one had explained the cow bell and what it was for when they went to that teacher's classroom at the end of the school day. Although this is not a desired outcome of the study, it does demonstrate the power of observational learning. Another possible reason for the pattern of results for Classroom Three was the fact that the teacher was taking graduate level Special Education classes at the time of the study. Many of those classes focused on behavior intervention and classroom environment. The teacher in Classroom Three was also writing a research paper on whether the Promoting Alternative Thinking Strategies (PATHS) social-emotional curriculum being used in the classrooms made teachers feel more prepared to support children through difficult behaviors. She was reading a substantial number of research studies focusing on how children build emotional competence during the preschool years. It is possible that outside learning contributed to the increase in TPOTS scores over the course of the study.

Classroom four showed very little change throughout the phases of the study. The most change was comparing phases A-C (Cohen's  $d = 0.89$ , moderate effect size). This change might suggest general maturation over time.

#### *Conclusions about Individual Classroom Effect Sizes*

This information alone is not enough to determine if the changes during the phases of the study were related to consultation procedures put into place. It is fair to say that both experimental classrooms showed progress when compared to their baseline scores and that they were able to maintain their level of implementation even without training. The control classrooms had very inconclusive results. One classroom improved from the beginning of the study to the end of the study with no formal intervention. The other classroom did not make

notable improvement. Such results suggest a need for further study and a larger number of participants.

### *Analysis of Permanent Products*

During the training and peer coaching phases of the study, teacher dyads completed the Inventory of Practices. The Inventory of Practices was constructed in a Likert Scale format with score ranges of 1-Seldom, 2- Occasionally, and 3- Consistently (Appendix G). Teachers completed the scale together and agreed upon a level of implementation together. Upon examination of the mean scores for the two experimental classrooms, Classroom One indicated a higher level of consistency with which they implemented their skills than Classroom Two. Although Classroom One did show a higher overall score, Classroom Two showed just as much individual rate of improvement when looking at their baseline compared to peer coaching phases.

It appears as though Classroom Two was not aware of their progress. When trying to determine why that might be the case, the dynamic between the two classroom teachers was rather negative overall. It is possible that their perceptions reflected more the general feeling of the classroom (which was more negative) than their actual implementation of skills. Also, they did not receive any positive feedback from the trainer during the peer coaching phase of the study which may have caused them to question their implementation or progress.

## Chapter V: Discussion

### Discussion

#### *Research Questions and Hypothesis*

The current research sought to determine the following:

(5) Does use of a peer coaching model lead to increase of fidelity of implementation of the Teaching Pyramid Model?

(6) Is a trainer needed to guide the peer coaching model after it has been put into effect?

The current researcher hypothesized that implementation fidelity of the Pyramid Model will improve by implementing a peer coaching model. The hypothesis is that a peer coaching model will improve the implementation of the program without continued presence of a trainer.

*Does use of a peer coaching model lead to increased fidelity of implementation of the Teaching Pyramid Model?*

When examining effect sizes and visual analysis, results indicated that use of a peer coaching model did help to increase fidelity of implementation of the Teaching Pyramid Model.

Experimental classrooms had large effect sizes during the first phase of the study comparing baseline to training (Cohen's  $d = 8.85$ ; Cohen's  $d = 24.94$ ) as well as a large effect sizes comparing baseline to peer coaching (Cohen's  $d = 10.03$ ; Cohen's  $d = 17.35$ ). However, one experimental classroom showed a slight decrease in TPOTS scores when comparing training to peer coaching while the other classroom maintained their scores when comparing training to peer coaching. These results suggest that implementation of the Pyramid Model maintained results without the use of a trainer, but did not show an increase in number of skills demonstrated by the teachers in the experimental classrooms.

When examining the control classrooms, one control classroom showed similar effect sizes to the experimental groups while the other showed small to moderate effect sizes throughout the phases of the study. Because of the variability of the control classrooms, further research is needed to definitely say that peer coaching was the cause of the variance across phases. However, it is fair to say that classrooms receiving intervention showed a greater overall increase in TPOTS scores. Therefore, the hypothesis that peer coaching would help to increase fidelity of the Teaching Pyramid Model was supported by results of the study.

*Is a trainer needed to guide the peer coaching model after it has been put into effect?*

To answer this research question, examination of the training (B) to peer coaching (C) phase of the study needed to occur. One experimental classroom had a large effect size (Cohen's  $d=1.23$ ) while the other had a moderate effect size (Cohen's  $d=0.43$ ). However, both classrooms actually showed a decrease in TPOTS scores during that phase of the study. So, both classrooms made more progress during the training phase of the study than during the peer coaching phase. However, both classrooms demonstrated a higher implementation when comparing baseline to peer coaching. Although the classrooms did not show increased scores when comparing training to peer coaching, they maintained a much higher level of implementation during peer coaching when compared to the baseline condition.

There are many factors to consider when examining the differences in overall scores on the TPOTS between the experimental classrooms. The classrooms began with very different baseline scores. Classroom One had a mean baseline score of 72.81 while Classroom Two started with a mean score of 36.17. Although Classroom Two had lower overall scores, they showed very similar individual growth when compared to Classroom One. Another reason for the amount of



progress or lack thereof for the experimental classrooms might have something to do with the areas of focus chosen by the experimental classrooms. When speaking about progress, this includes perceived progress as indicated in permanent products as well as actual progress as indicated on TPOTS scores.

Classroom One chose to work on universal components of the Teaching Pyramid Model. First they focused on increasing specific positive praise for all children in the classroom and then they chose to focus on the overall classroom environment. They learned skills that could apply to the entire classroom and to each child in the classroom. Because the skills were generalizable, the teachers may have gained more confidence in their skills and their ability to make change in their classroom. This was reflected in their self-report given in Likert scale format as well as in TPOTS scores.

Classroom Two chose to focus on one child's individual behavior as well as autonomy in preschool children to help them understand the child demonstrating behavior concern. These skills are at the top of the pyramid model and the skills they learned applied to fewer children. The specific components that were part of the behavior plan included better transitions for the child as well as helping them to identify emotions. Those skill areas appeared to generalize to the entire classroom as those areas of the TPOTS increased percentage of skills implemented. The areas that were not addressed in the behavior plan were building relationships and environmental components. This may have contributed to their lower overall score when compared to Classroom One. A very large number of assessed skills on the TPOTS focus on building relationships. A smaller percentage focus on environment.

### *Comparing Results to Prior Research*

Prior research on peer coaching examined the transfer of implementation from training to practice. Joyce and Showers found that 5% of learners would use their new skill when only theory was used to teach the skill. When theory and demonstration were used it was found that 10% of the participants put the skill into practice. Practice in addition to theory and demonstration resulted in 20% implementation. Feedback in addition to all other components resulted in 25% implementation. When coaching was added to all other components implementation rose to 90% (Joyce and Showers 1983).

Results of the current study found that practice in addition to theory did in fact increase the percentage of TPOTS components implemented in the classroom (phases A-B). The current study also found implementation to rise to around 90%. These results suggest that a combination of training and peer coaching resulted in similar results to prior studies.

This study differed from other research about peer coaching because it reported effect sizes. Prior research articles focusing on peer coaching reported percentage of implementation steps put into place, but provided no further analysis. It was unclear exactly what changed during the implementation of the different phases of the prior studies as theory, demonstration, and implementation were not clearly defined. The current study outlines the exact interventions put into place during each phase of the study to give a clear picture of the type of implementation.

Studies that examined treatment integrity in general (Witt et al., 1997; Noell, Witt, Lafleur, Mortenson, Ranier, & Feeland, 2000; Noell et al., 2002; Sterling-Turner, Watson, and Moore 2002) all showed that integrity improved with a researcher. This study also found that implementation integrity improved with the use of a trainer. The difference between this study

and the above mentioned studies were two distinct areas. Some of the above mentioned studies showed that implementation integrity declined without the use of a researcher. This study did not see a decline in implementation during the peer coaching phase of the study when the trainer was no longer available. Other studies above reported that teachers improved or sustained results when the consultant was no longer available. That is true, but in those studies the teachers were implementing one strategy that had specific steps to follow. The teachers didn't have the opportunity to design interventions on their own. The current study encouraged teachers to implement interventions on their own. They were given general support framework, but the peer support allowed them to make progress without a specific protocol for one intervention. Rather, the teachers were provided with more general information that could be applied to many interventions ranging in intensity. Prior studies did not focus on a model of intervention. Rather, they focused on implementation of one intervention.

The need to find a way for teachers to implement multiple levels of intervention successfully in a classroom is of the utmost importance. The research about tiered models and what they can do to prevent academic failure as well as improve social and emotional competence overwhelmingly points to improved outcomes for students. If teachers cannot implement intervention in a way that has been proven to bring effective results, we fail the children who would have benefited from the intervention. Therefore, measuring implementation integrity is just as important as measuring child outcomes. The Teaching Pyramid Observation Tool (TPOTS) is one such preventative model that aims to improve results for preschool children.

*The Teaching Pyramid Observation Tool (TPOTS) has value*

The Teaching Pyramid Model has been implemented in hundreds of locations across the United States of America. It is valuable because it is a collection of best practices created out of research to improve social and emotional competence of preschool children. Improving the social and emotional competence of preschool children sets them up to be successful during the preschool years and according to research, sets a trajectory for less violence, drug use, and incarceration later in life and more academic success. Knowing that information, implementing that preventative model with integrity might mean the difference for the children and teachers in preschool classrooms. The creators of the Teaching Pyramid Model saw the importance of creating a tool to ensure fidelity implementation and to guide teachers and consultants in implementation.

Results of the current study showed that the two experimental classrooms in the study improved teaching practices when implementing the model. The teachers increased use of specific positive praise, improved the classroom environment, improved relationships with children, improved relationships with families, helped a child to regulate extreme behaviors, and learned about autonomy and how it plays a role in behavior concerns. Those were the areas that were chosen by the teachers and showed improvement. However, those were not the only areas which improved over the course of the study. When teachers improved the above mentioned areas, their transitions got better, their redirection of inappropriate behavior got better, their consistency in explaining the classroom schedule got better, and their teaching of overall behavior expectations got better. This happened because one positive change led to another and the teachers were able to generalize some of their skills.

Interestingly enough, one teacher made progress in implementation by simply being exposed to some of the ideas and researching on their own (control classroom three). This was confusing for the purposes of this study, but when looking at the implementation of this model in general, that is an exciting concept. The idea that exposure might be enough to start to implement the strategies which could positively impact children brings even more hope to the idea of making classroom improvement. It means that classrooms that do not have direct access to consultants or a peer coaching model put into place could also work toward implementation of these concepts with some success. Many preschool classrooms do not have such a level of support. Giving those teachers information without direct consultation might lead to better classroom practices in and of itself. That is really good news for preschool teachers and their children.

As exciting as those concepts are when looking a larger picture of the implementation of this model, there were some specific limitations of the current study that need to be discussed.

### *Limitations*

There are some major limitations of the study. One limitation is the number of participants. There were only four classrooms available that had not received consultation before, so there was no way to increase the number of participants and have objective results. More participants would allow for more powerful results and better determination of a causal relationships between training, peer coaching, and TPOTS results.

Another limitation was the number of observations. Although the observations met stabilization requirements, it would have been better to have more observations particularly during the peer coaching phase to demonstrate a longer period of time that the classrooms maintained fidelity.

Control of intervening variables and history effects proved to be difficult in this study due to location of the classrooms as well as outside influences that could not be accounted for. The control classroom teacher researched concepts on her own and heard about strategies being implemented in the experimental classroom during the course of the study.

This study addressed implementation fidelity but did not address child outcomes. It would have been interesting to see if child scores on the PATHS social and emotional universal screening tool went up for the children over the course of the study. That tool measures aggressive/disruptive behavior, maintaining attention, and use of social and emotional skills. It would be very nice to see if teacher instruction and intervention aiming to improve student outcomes actually lead to better student outcomes.

Although this study addressed teacher implementation fidelity, it did not directly address trainer fidelity. The trainer can be seen and heard on camera performing tasks, but there was not direct analysis of the steps implemented by the trainer.

#### *Implications for future research*

Future research should focus on how much support is needed and what type of support is needed for teachers to accurately implement the Teaching Pyramid Model as well as other preventative tiered models. Further examination of teacher perceptions in relation to their own skills might also be very valuable. Teacher perceptions could play a very important role in confidence and their ability to carry on with implementation on their own, research should also examine student outcomes as a result of changes in teaching practices.

In a much broader sense, it appears that applying a peer coaching model to other preventative models across settings might show positive results. Teachers who do not work in a system that

allows for peer collaboration might experience more isolation in dealing with challenges.

Because peer coaching shows some promise on a small scale, future research should apply peer coaching to tiered models of prevention within the public school system that address academics and/or behavior. In addition to peer coaching, other models should also investigate the effectiveness of adding a fidelity tool to their program implementation. The fidelity tool should not be only a form of evaluation, but rather a guide in determining how intervention should be implemented in the classroom.

Future research should also examine teacher training programs. Many of the items located on the TPOTS are often considered to be common sense or something that teachers are already doing in their classroom. However, research has found that these components are often missing in preschool classrooms. Teacher training programs should investigate why these components are often missing from a preschool classroom. Teacher training programs might also focus on differentiated instruction not only in reference to academic skills but also in reference to social and emotional skills.

Even if peer coaching helps to sustain preventative programming, a trainer is still required to put the program into place. Application of preventative programming within a system is extremely labor intensive. Further research needs to determine if there is a way to make the implementation of the peer coaching a smoother and less labor intensive program. During this study, the trainer focused only on the implementation of this program and putting a structure into place. It might be very difficult for a trainer who has other job obligations to perform to put such a model into place. It would be beneficial to determine who can be a trainer and if multiple trainers might be able to work together to accomplish the task.

### *Implications for Practice*

This study shows that a trainer may not be needed to implement the Teaching Pyramid Model if there is an infrastructure put into place to allow for peer support. The reason this finding is important is because many early childhood settings do not have a consultant available or may only have one available part-time. If peer coaching can sustain the model, it might allow more programs to implement this preventative practice which research suggests will benefit children. If more children can show improved social skills and less aggression in the early years, it might lead to better academic outcomes as well as better quality of life and fewer children entering the justice system later in life.

Another implication for practice is examining the use of modeling in relation to teaching skills in a classroom setting. One concern brought to attention in this study was the lack of transference of skills when teachers received direct modeling of intervention. Professionals who guide teachers in implementation of practice are challenged to find other ways to transfer skill base. The bug-in-ear was a useful tool in this study. Its use for training purposes should be further investigated to determine if the tool could be used to benefit other populations and settings.

Results of the study also suggest that teachers might benefit from monitoring their own progress and recognizing their own demonstration of skills. Teachers in the study reported wanting more time to discuss as a team. They reported that it was beneficial. Also, analysis of permanent products found that one teacher viewed their own progress to be significant. That teacher also had the highest overall TPOTS scores. In addition, the teachers in this study chose the areas they would like to address in their classroom. Prior research has supported the use of



teacher choice in determining classroom direction and intervention. Although research supports this concept it is unclear if that practice is used in the field.

During this study, there was not much time for the trainer to build rapport with teachers. Rather, the focus was more on helping teachers to work together with their peers. Even with a limited amount of time spent with the trainer, the experimental classrooms made progress in implementing the Teaching Pyramid Model. These results challenge the assumption that rapport is a necessary component in training and consultation. Perhaps the relationship is not as important between the trainer and the teachers. Rather, success could be more dependent on the type of intervention implemented and the framework put into place.

It was brought to the attention of the trainer throughout the course of the study that a peer coaching model is a shift in consultation practices. More traditional consultation practices require a problem to arise in the classroom and then the consultant to help the teacher address the issue. The premise behind the Teaching Pyramid Model is preventative practice. Therefore, it makes logical sense to put into place a preventative form of support for teachers that helps them to work on their skills on a regular basis so that they are more capable of addressing problems as they arise in the classroom independently from a consultant. It is quite possible that a tiered model of intervention relating to the best ways to support teachers could be developed. The universal levels could focus on building relationships and partnerships with their peer coaches. Environment could focus on working conditions and opportunities to for peer coaches to meet. Secondary components could focus on resources available to teachers to help them work on gaining skills together in peer groups. Targeted interventions would focus on “red flags” identified in the classroom that were not addressed through the other forms of intervention.

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Table 1

*Participants*

<i>Teacher</i>	<i>Sex</i>	<i>Credentials</i>	<i>Years of Experience</i>	<i>Age of Children</i>	<i>Number of Children</i>
Teacher One- Experimental Classroom	Male	Bachelor's Degree in Early Childhood/ Elementary Ed. Degree	2	3-5 Years Old	17
Assistant Teacher One	Female	Child Development Associates (CDA) and Finishing Early Childhood Degree	3		
Teacher Two	Female	Early Childhood Degree	1	3-5 Years Old	17
Assistant Teacher Two	Female	CDA	15		
Teacher Three	Female	Early Childhood/Special Education Degree- Completing a Master's Degree in Special Education	3	3-5 Years Old	17
Assistant Teacher Three	Male	Elementary Education Degree	10		
Teacher Four	Female	Early Childhood Degree	3	3-5 Years Old	17
Assistant Teacher Four	Female	Elementary Education Degree	2		

Table 2

*Occurrence Agreement among Raters across TPOTS Observations:*

<i>Observation</i>	<i>Agreed/Total of agreed and disagreed (141)</i>	<i>Percentage of Agreement</i>
Baseline Observations		
Classroom One (RF)	139/141	98.58%
	139/141	98.58%
	139/141	98.58%
Classroom Two (AF)	138/141	97.87%
	136/141	96.45%
	136/141	96.45%
Classroom Three (CF)	135/141	95.74%
	134/141	95.03%
	131/141	94.32%
Classroom Four (BF)	133/141	94.32%
	132/141	93.61%
	131/141	92.90%
Training Observations		
Classroom One (RF) (Ex)	139/141	98.58%
	138/141	97.87%
	141/141	100%
Classroom Two (AF) (Ex)	135/141	95.74%
	133/141	94.32%
	131/141	92.90%
Classroom Three (CF) (Control)	136/141	96.45%
	133/141	94.32%
	138/141	97.87%
Classroom Four (BF) (Control)	133/141	94.32%
	132/141	93.61%
	134/141	95.03%
Peer Coaching		

Classroom One (RF) (Ex)	138/141	97.87%
	137/141	97.16%
	139/141	98.58%
Classroom Two (AF) (Ex)	137/141	97.16%
	136/141	96.45%
	133/141	94.61%
Classroom Three (CF) (Control)	137/141	97.16%
	130/141	92.19%
	129/141	91.48%
Classroom Four (BF) (Control)	136/141	96.45%
	132/141	93.61%
	133/141	94.61%

Table 3

*Descriptive Statistics across Phases*  
*Dependent Variable: TPOTS Scores*

<i>Phase</i>	<i>Classroom</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>N</i>
Baseline	Classroom 1 (RF)	72.81	2.68	3
	Classroom 2 (AF)	36.17	2.45	3
	Classroom 3 (CF)	56.73	2.55	3
	Classroom 4 (BF)	48.70	2.49	3
	Total	53.60	14.05	12
Training	Classroom 1 (RF)	97.40	2.87	3
	Classroom 2 (AF)	85.06	1.29	3
	Classroom 3 (CF)	70.99	4.04	3
	Classroom 4 (BF)	50.04	2.71	3
	Total	75.87	18.55	12
Peer Coaching	Classroom 1 (RF)	94.57	1.49	3
	Classroom 2 (AF)	84.04	3.03	3
	Classroom 3 (CF)	73.16	4.07	3
	Classroom 4 (BF)	51.03	2.73	3
	Total	75.71	17.04	12
Total	Classroom 1 (RF)	88.26	11.83	9
	Classroom 2 (AF)	68.42	24.28	9
	Classroom 3 (CF)	66.96	8.34	9
	Classroom 4 (BF)	49.92	2.51	9
	Total	68.39	19.37	36



Table 4

*Description of the Training Phase*

<i>Classroom</i>	<i>Date</i>	<i>Training</i>
<i>Classroom One</i>	2/4/13	Lead and assistant teacher met with the trainer outside the classroom setting for ½ hour. They were read the standard protocol (see appendix F). They were then instructed to choose an area of focus from the Inventory of Practices. They chose building positive relationships 1. Specifically, they identified recognizing positive behaviors and giving specific positive praise (see appendix G). After choosing their area of interest the team completed the teacher form (appendix F). Teachers identified a need to increase specific positive praise in the classroom. They identified that they needed to make a way to remind themselves to praise and to make it the culture of the classroom. They decided to bring in a cow bell that was placed on a wooden post in the classroom at child height. The plan was to paint the post. Each time that a teacher in the classroom heard another person giving praise, the person giving the praise would be invited to ring the bell. The teachers agreed to bring it into the classroom the next day. They agreed to begin decorating the post the next day with the help of the children and begin to teach the children about how to use the bell. The goal was to increase positive interaction between children and remind the adults to give the children more specific positive praise.
	2/5/2013- Video taping of the training phase began. Camera was turned on in the classroom from 9:30-11:30. Structured and unstructured activities occurred during that time.	The bell was brought into them room. The trainer began to video tape for the first observation of the classroom during the training phase. Children helped to decorate the post. Teachers did a lesson about the bell during circle time. Children and teachers began to use the bell. The team agreed to meet again the following week to determine how things were going.
	2/11/2013- Trainer and teacher meeting	Teachers brought their completed section of the Inventory of Practices with them to the meeting. They discussed their progress in the areas and completed the teacher rating form. Both teachers had completed observation of the classroom and their partner throughout the week and completed the

	<p>inventory based on what they had seen throughout the week. They reported that they made notes daily on the sheet. The trainer was there for support, but was not really needed. The consultant really just sat back, took notes, and made copies of permanent products. The teachers were used to the routine from the last meeting. Teachers reported at this meeting that they felt the classroom climate had changed and that they were close to meeting all of the criteria areas on their section of the inventory of practices. They began to talk about what area they may want to tackle next. There was some conversation about classroom environment, but they decided to still with their current area for at least one more week to see where it went. The team met for ½ hour. They also reported several times that they wanted more time to meet.</p>
<p>2/13/2013- Video taping of the classroom occurred from 9:30-11:30. The footage would later be viewed by raters and a TPOTS was conducted.</p>	<p>Teachers brought their completed section of the Inventory of Practices with them to the meeting. Both teachers felt they had met all of the goals on the form. They completed the teacher meeting form together and identified that they wanted to move onto “Designing Supportive Environments” (Appendix H) for the next week. Both teachers commented on wanting more time to meet. The trainer had very little to do with the meeting aside from explaining the next phase of the study. The trainer explained that the teachers were to continue completing the inventory of practices section of their choosing for the next three weeks. They were told they would be given a meeting time of ½ hour per week to get together and discuss as well as complete the teacher meeting form. They were also told that they would be doing it without the trainer and would be on their own for the rest of the study unless an emergency situation were to come up.</p>
<p>2/18/2013- Final meeting of the training phase occurred. It included both teachers and the trainer. 2/20/2013- Video camera was turned on in the classroom from 9:30-11:30.</p>	

<i>Classroom</i>	<i>Date</i>	<i>Training</i>
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<i>Classroom</i>	2/4/2013	Lead and assistant teacher met with the trainer outside the classroom setting for over the intended 1/2 hour time limit due to level of concern presented by the dyad. They were read the standard protocol (see appendix F). They were then instructed to choose an area of focus from the Inventory of Practices. They chose two areas that they felt went together. They picked Individualized Intensive Interventions 3- Develops and implements behaviors support plan and Social and Emotional Teaching Strategies 3- Encourages Autonomy (Appendix H). More specifically, they wanted to focus on helping children to learn self-regulation skills. The teachers picked this category because they had one particular child who was having extreme difficulty in the classroom and they felt that by helping that one child they would also be helping the rest of the room. The consultant asked about their concerns for the child. They identified: standing on tables, screaming, refusing to follow directions, pushing, hitting, kicking, and throwing objects in the classroom. The consultant asked the teachers when these things were happening. The teachers identified that it was during transition times (free play to carpet, handwashing to lunch, etc.). The trainer suggested using a behavior plan with parent permission. The teachers agreed. The consultant suggested using a behavior plan that had pictures of the classroom routine on one side and blank boxes on the other. It would serve two purposes. It would be a visual reminder of what was coming next in the schedule. It would also be a token economy. If the child completed the task while following the
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classroom rules, she would get to put a princess sticker next to the activity she completed while following the rules. Teachers liked that idea and they added to it. They said that to help reinforce what we want her to do, let's put pictures of the rules on popsicle sticks that we can hold up as reminders instead of engaging in a power struggle with the child during redirection. The consultant liked the idea. The consultant agreed to contact the child's family to gain permission and have them sign off on the plan by the end of the day. The consultant offered to make the rules popsicle sticks because she already had the pictures on file. Carpet time rules went with the evidence-based PATHS social and emotional curriculum and included: gentle touches, listen, sit cross-legged, raise your hand, quiet, and hands-in lap. Classroom rules included: gentle touches, inside sounds, walking feet, and use your words. The teachers added one more component. They said that this child could not use their words when angry. They said that when the child got mad they would shut down and not tell anyone what was wrong or how they were feeling. The consultant suggested adding a visual page of feeling faces to the plan. If the child is shut down, present the pictures and see if she will point to how she is feeling. The faces would include happy, mad, and sad. The teachers agreed to make the feeling faces and the consultant agreed to make the daily schedule chart because she already had their pictures on file. This meeting took longer than 30 minutes. It went closer to an hour. Teachers completed the teacher meeting form. The consultant asked how they wanted to implement the plan. The consultant

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offered to model it the next day in the classroom. The teachers thought that was a great idea. The consultant agreed to go into the classroom the next morning and model for the teachers how to use the plan. The consultant also offered to get the teachers information about helping children to self-regulate if they were interested. Certainly having the child identify emotions is a beginning to self-regulation.

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2/5/2013- Parent permission was obtained to try the plan and materials were made. This type of plan is typical in the setting and most of the materials had already been created for other classrooms. The video camera went up in the classroom to capture the modeling of the plan by the trainer and then the teacher implementation of the plan to be analyzed later with the TPOTS.

For the first hour of video recording that day, the consultant modeled the use of the plan directly with the child. The child was responsive. The second hour of the videotaping had the assistant teacher doing what the consultant had done and asking questions if needed. The child was responsive to the assistant teacher as well. The use of the token economy sticker system was modeled, the use of the feeling faces sheet was modeled (when the child was showing a sad or mad feeling but not talking about the feeling), and the use of the rules reminder popsicle sticks were modeled. The assistant teacher completed the tasks in the same way that the consultant had. The plan was going to be monitored by counting the number of stickers earned each day to see if the number earned was increasing. It was also monitored by the number of incident reports completed when the child harmed other children.

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2/11/2013-

The teachers met with the trainer outside the classroom setting. They presented the inventory of practices they had each completed. The team completed the teacher meeting form together. This was a tense meeting. The teachers accounts of what was happening in the classroom were different. The

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assistant reported meeting the goals established on the inventory of practices while the lead teacher reported not implementing the plan or meeting the goals on the inventory of practices. The lead teacher told the assistant that she wanted her to be doing things differently. She reported that she didn't feel like they could do it without the trainer in the room. The consultant suggested a different type of modeling to the team. One of the strategies used at the Center was the use of "bug-in-ear." This strategy allowed the consultant to talk to the teacher through the use of an ear piece and a radio while not being directly involved in intervention. It was suggested so that the trainer could provide support without being directly involved in the hopes that it would help the assistant teacher to learn new skills that might be better implemented on their own without the use of a consultant. The team agreed to try it the next day. This meeting once again ran over time. This time it took about 45 minutes. The assistant teacher wore an earpiece for the first hour and the lead teacher wore the ear piece for the second hour. The consultant gave the teachers directions about how to implement the plan when needed. The teachers responded. This went on for two hours. It was all recorded. During that amount of time, the consultant gave redirection to the assistant teacher five times in relation to implementation of the behavior plan. The trainer gave the lead teacher redirection four times.

2/12/2013- The video camera was turned on in the classroom. The trainer placed themselves right under the video camera so that the words she spoke into the radio could be heard on the video recording. Although the consultant could not be seen this time, she could be heard and the directions given to

The teachers met with the trainer. They brought their completed inventory of practices and the team completed the teacher meeting form. The teachers were much more in agreeance this time around. The assistant reported that the suggested changes made by the consultant during bug-in-ear had reminded her of parts that she had forgotten. The lead teacher reported feeling more satisfied with the implementation of the plan. Both teachers reported more satisfaction associated with overall classroom climate. The trainer explained the next phase of the study to the teachers. She explained that they would be meeting on their own for the next three weeks. She also explained that if there was an emergency and they needed more support that she could be pulled in to train if needed. The teachers decided to continue working on the areas they had already identified. At that point in time they felt that had not accomplished all they could in the identified area.

teachers were clearly registered on camera. This observation was later analyzed with the use of TPOTS.

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2/18/2013

2/19/2013- The video camera was turned on for two hours in the classroom from 9:30-11:30 for the last video recording of the training phase of the study.

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<i>Classroom</i>	Video recording of the classroom happened in	No consultation was given
<i>Three</i>	two hour intervals on the following days:	
<i>Control</i>	2/5/2013	
	2/13/2013	
<i>Classroom</i>	2/20/2013	

TPOTS were used to analyze the observations.

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<i>Classroom</i>	Video recording of the classroom happened in	No consultation was given
<i>Four</i>	two hour intervals on the following days:	
<i>Control</i>	2/5/2013	
	2/12/2013	
<i>Classroom</i>	2/19/2013	
	TPOTS were used to analyze the observations.	

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Table 5

*Peer Coaching and Permanent Products*

<i>Classroom</i>	<i>Date</i>	<i>Permanent Product Information</i>
<i>Classroom One</i>	2/22/2013	Teachers met and went over their section of the Inventory of Practices (still Building Relationships). They completed the teacher meeting form as well.
<i>Experimental Classroom</i>		<p><i>Strengths identified:</i> Relationships with parents, high expectations for students, children are independent in the classroom, nice implementation of curriculum, we are accepting of challenge, and we have fun!</p> <p><i>Areas to work on:</i> Continue to clarify ringing of the bell for specific positive praise in relation to involving children. Continue to work on addressing all parents by name, consider moving onto environmental components for next week.</p> <p><i>Ways to help solve the problem:</i> Examine the environmental components. Consider using parents' names gradually and using Mr. and Mrs. If it feels better.</p> <p><i>Plan for after the meeting:</i> Both teachers will remind children of the rules surrounding use of the bell for specific positive praise. Both teachers will examine environmental arrangement.</p> <p>- No training was provided. The teachers were on their own.</p>

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2/26/2013- Video cameras were turned on in the classroom for two hours from 9:30-11:30. This observation was analyzed with TPOTS.

Teachers completed the Inventory of Practices and completed the teacher planning form.

They moved onto sections 1 and 4 of Designing Supportive Environments while still taking into consideration the relationship building with teachers and parents.

*Strengths identified:* Social relationships, high expectations, children are independent, treating it more like Kindergarten, nice job with curriculum, we have fun, we made a sweet milk jug igloo, we have a wicked awesome compliment bell!

*Areas to work on:* Room arrangement and lunch-to-Book/Puzzle time transition

*Ways to solve the problem:* We need to meet requirements of the Environmental Rating Scale as well as those in the Pyramid Model. We want to explore this further and make sure we can do both. The removal of our computer Center to make a traveling center is causing environmental turmoil. It's throwing a wrench into our gears. We will work it through together.

*Who will follow through with the plan?* Continue working on addressing parents by name, continue building a positive environment with more praise and bell rings, and try to fit in more time to discuss more detailed room arrangement. We need more time outside the classroom.

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2/28/2013

- No consultation provided. Teachers were on their own.

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3/4/2013- Video camera was turned on in the classroom. It recorded for two hours from 9:30-11:30. It was later analyzed with TPOTS.

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3/8/2013

Teachers met in their dyads  
and completed the Inventory of Practices section and the Teacher Meeting Form.

Section of concentration: Environment

*Strengths:* Same as last week

*Areas to work on:* Areas/Centers in room need organized to clearly define boundaries, separate quiet/loud centers, and reorganized to better meet the needs and interests of the children.

*Ways to help solve the problem:* Currently, a large igloo stands in the way of finishing our restructuring. Upon its demise, we will better utilize our carpet by turning it into blocks/construction. We have already moved the library and quiet area closer to the writing area. We've also moved the game shelf and changed the puzzle shelf. We are slowly working toward our goal!

*Who will follow through with the plan?* We'll continue discussing downsizing the amounts of items and try to bring in some higher interest items.

3/13/2013- Video camera  
was turned on for two  
hours. It was analyzed  
with the TPOTS.

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*Classroom Two*

*Experimental Classroom*

2/22/2013

Teachers completed their section of the Inventory of Practices and their teacher rating form.

*Section Identified:* Continue working on emotional regulation

*Areas of Strength:* Consistency, team-work (this is evidenced by how well our child who was in need is now responding to us).

*Areas to work on:* We need to consider implementing a plan for another child in the classroom. He was absent all last week, but he has some needs.

*Ways to help solve the problem:* Keep implementing plan for the other child and stay consistent. Give her encouragement when appropriate, and show her she is loved. Finish creating a plan for the other child. Use it for him when he is here.

*Who will follow through with the plan?* Use the noise-o-meter intervention with our little guy to help him regulate during melt downs. Also, continue using the plan in place for our other child.

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2/26/2013- Video camera went into the classroom to video tape for two hours. This observation was analyzed with the TPOTS.

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2/28/2013	<p><i>Section Reviewed:</i> Social and Emotional Teaching Strategies: Promotes Identifying and Labeling of Emotions in Self and Others.</p> <p><i>Strengths:</i> Communication, Consistency, and team-work.</p> <p><i>Areas to work on:</i> Utilize the Problem Solving Tool Kit more. Use the Noise-O-Meter with a child.</p> <p><i>Ways to solve the problem:</i> Continue to use behavior plan with our one child. Give positive reinforcement to the entire class. Also, continue to keep families informed about daily progress.</p> <p><i>Plan for after the meeting:</i> Keep using behavior plans. Continue to have open communication with each other to keep our classroom running smoothly.</p>
3/4/2013- Video camera went into the classroom to video tape for two hours. This observation was analyzed with the TPOTS.	
3/8/2013	<p>Teachers met and completed both sets of paperwork.</p> <p><i>Section Reviewed:</i> Promotes Identification and labeling of emotions in self and others</p> <p><i>Areas of strength:</i> Communication with each other and with parents, consistency, and follow through.</p> <p><i>Areas to work on:</i> Work on a plan for our other child. Tweak approach for the plan that is already in place.</p>

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Ways to help solve the problem: Some of the old behaviors are resurfacing for the child with the plan already in place. Edit the plan. Find a more immediate approach for our other child when he melts down.

What is the plan for the next meeting? Make a new plan. When both of these children are melting down it is very difficult. It is also very difficult to get this accomplished during short meeting times. We need more time.

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3/13/2013- Video camera went into the classroom to video tape for two hours. This observation was analyzed with the TPOTS.

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*Classroom Three*  
*Control Classroom*

Video recording happened on these days and was analyzed with the TPOTS:  
2/26/2013  
3/4/2013  
3/13/2013

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No consultation was given.

*Classroom Four*  
*Control Classroom*

Video recording happened on these days and was analyzed with the TPOTS:  
2/26/2013  
3/4/2013  
3/13/2013

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No consultation was given.

Table 6

*Effect Sizes across Phases:*

<i>Classroom</i>	<i>Total Effect Size</i>	<i>Baseline- Training (A-B)</i>	<i>Training- Peer Coaching (B-C)</i>	<i>Baseline- Peer Coaching (A-C)</i>
Classroom One Experimental	Cohen's d= 10.54 Large Effect	Cohen's d= 8.85  Mean of A=72.81 Mean of B=97.40  Large Improvement	Cohen's d= 1.23  Mean of B=97.40 Mean of C=94.57  Small Decrease	Cohen's d=10.03  Mean of A=72.81 Mean of C=94.57  Large Improvement
Classroom Two Experimental	Cohen's d= 3.98 Large Effect	Cohen's d=24.94  Mean of A=36.17 Mean of B=85.06  Large Improvement	Cohen's d= 0.43  Mean of B=85.06 Mean of C=84.04  Small Decrease	Cohen's d=17.35  Mean of A=36.17 Mean of C=84.04  Large Improvement
Classroom Three Control	Cohen's d= 11.35 Large Effect	Cohen's d= 4.22  Mean of A=56.73 Mean of B=70.99  Large Improvement	Cohen's d= 0.53  Mean of B=70.99 Mean of C=73.16  Small Improvement	Cohen's d= 4.83  Mean of A=56.73 Mean of C=73.16  Large Improvement
Classroom Four (BF), Control	Cohen's d= 3.98 Large Effect	Cohen's d= 0.36  Mean of A=48.70 Mean of B=50.04  Small Improvement	Cohen's d= 0.36  Mean of B= 50.04 Mean of C= 51.03  Small Improvement	Cohen's d= 0.89  Mean of A= 48.70 Mean of C= 51.03  Small Improvement

\* A standard interpretation would be .2 or less- small effect, .5- moderate effect, and .8 or higher- large effect.

Table 7

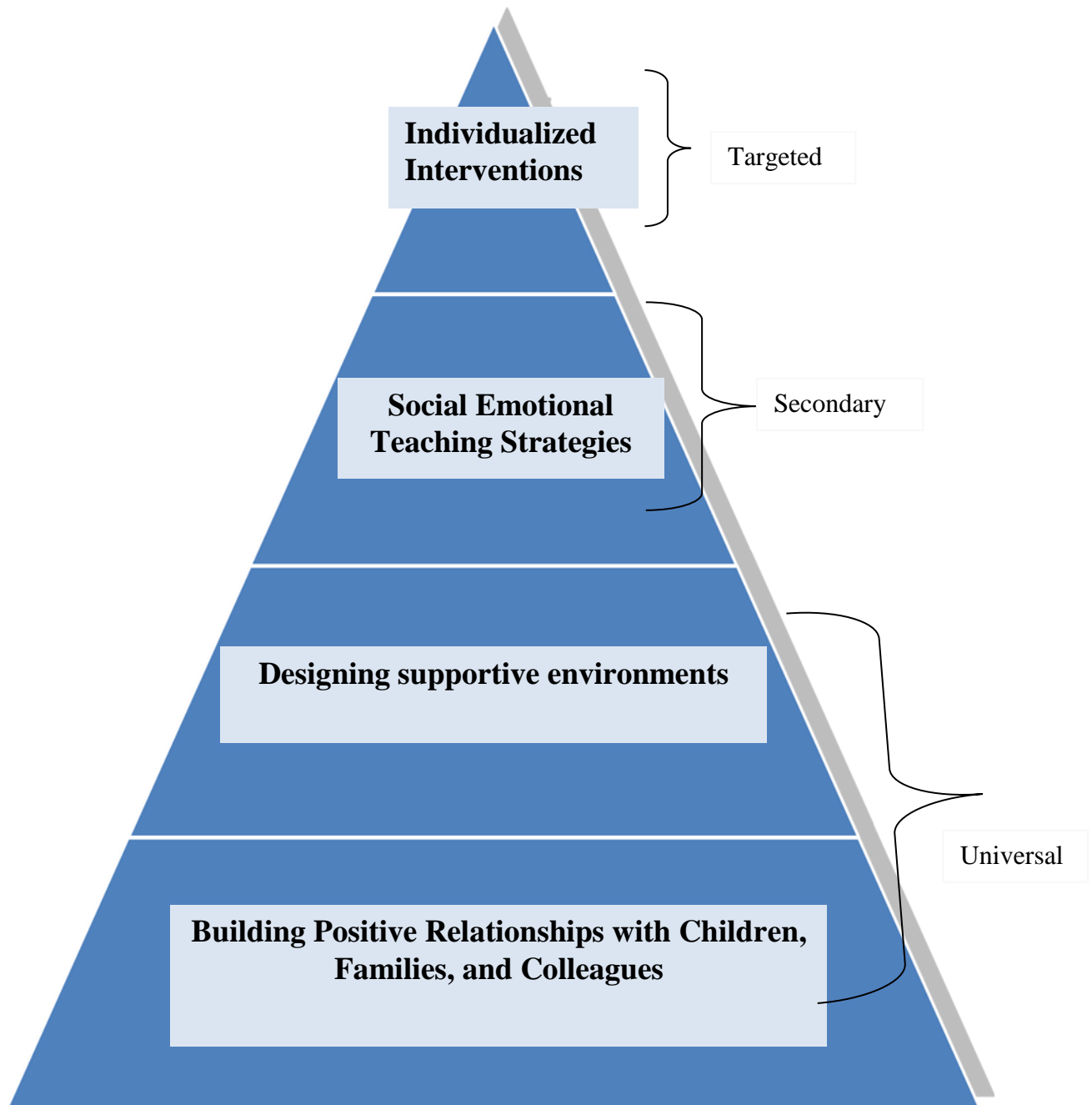
*Inventory of Practices Permanent Product Descriptive Statistics*

<i>Classroom</i>	<i>Part of Inventory/Date</i>	<i>Mean</i>	<i>SD</i>
Classroom One (RF)	Relationship- Training	2.70	.48
	Relationship- Training	3.00	.00
	Relationship- Training	3.00	.00
	Environment- Peer Coaching	2.25	.75
	Environment- Peer Coaching	2.67	.78
Classroom Two (AF)	Behavior Plan- Training	2.29	.95
	Autonomy- Training	2.00	1.00
	Behavior Plan- Training	2.50	1.00
	Autonomy- Training	2.00	1.00
	Behavior Plan- Training	2.50	1.00
	Autonomy- Training	2.00	1.00
	Behavior Plan- Peer Coaching	2.50	1.00
	Autonomy- Peer Coaching	2.00	1.00
	Behavior Plan- Peer Coaching	2.50	1.00
	Autonomy- Peer Coaching	2.00	.577



## Appendix A

### *The Diagram of the Pyramid Model*



Fox, L., Dunlap, G., Hemmeter, G., Joseph, G., & Strain, P. (2003). The Teaching Pyramid: A Model for Supporting Social Competence and Preventing Challenging Behavior in Young Children. *Young Children*, 58(4), pp. 48-53.

## Appendix B

### *Informed Consent of Participants*

#### Informed Consent of Participants: Control Group:

**Purpose and Expected Duration:** The purpose of the intended research is to determine what type of consultation model is most effective in facilitating the implementation of the Pyramid Model within one preschool early childhood setting. Expected duration of the study is four months (January 2013-April 2013).

#### **Procedures:**

- The goal of this consultation is to help the system function independently without the consistent use of a researcher or outside consultant. It is the goal of this study to find the most beneficial way to help the program work independently without imposing on the everyday workings of the Center.
- Those participants who are in the control group will be asked to continue with their usual interactions in the classroom.
- Depending on the progression of the study, the control group could be asked to implement some of the components of the study on a smaller scale toward the end of the study.
- Observation of the implementation of the program will be done over the course of the study with the Teaching Pyramid Observation Tool (TPOTS) and will be completed by the researcher and reliability partner. Video-taping of classroom implementation will be done as to not disturb the classroom with many observations.
- Teachers will not be given direct feedback on the TPOTS scores throughout the course of the study. They will have the opportunity to review all information pertinent to their classroom at the end of the study.

**Right to Decline:** Participants have the right to decline participation in the study and have the right to withdraw from the study even after the research has begun. There would be **no** consequence for withdrawing from the study and teachers **would not** be denied support as a result. Declining from the study would not impact their job in anyway.

**Possible harm or Inconvenience:** A consistent time commitment of at least one half hour per week will be expected of research participants. Research participants will also need to allow videotaping of their classrooms.

**Benefits of Participation and Research Benefits:** Benefits of participating in the study include the possibility of increased independence and better implementation of a preventative model of behavior intervention which also increases social skills. Teachers will receive professional development hours for each meeting time that includes the researcher. Ultimately, this research could lead to better outcomes for children and increased support for teachers. Research benefits would include identification of one possible procedure for providing support to teachers which would benefit children as well. This could lead to more effective consultation that functions in applied settings. It also completes a doctoral dissertation requirement for the researcher.

**Confidentiality:** Confidentiality will be observed and teacher names as well as the program name will not be reported in the study. Information about children will not be reported in the study with the exception of the number of students per classroom. Teachers will be referred to by a number within the study. With permission, the researcher will publish within

the dissertation the level of education of the teacher, the number of years they have been teaching in the classroom, and the number of students in their classroom.

If you have questions about this study or would like to learn more about your rights as a participant please feel free to contact the researcher at [mvaughn@cdcenters.org](mailto:mvaughn@cdcenters.org) or 814- 577-8630 and/or my research advisor Dr. Mark Fugate at [ffugate@alfred.edu](mailto:ffugate@alfred.edu). Thank you for your consideration.

Participant Consent (Please check one box and sign):

☐ I consent to participate in the research study outlined above. I understand that I am not required to participate in the study and that my participation is completely voluntary. I consent to having my level of education, number of years teaching, and number of children in my classroom published without identification of my name. I agree to meet with my assistant teacher once per week to discuss implementation of the Pyramid Model. I consent to being video-taped in order for researchers to complete more frequent TPOTS observations.

☐ I do not wish to participate in the research study.

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Signature of Participant

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Date

## Informed Consent of Participants: Experimental Group:

**Purpose and Expected Duration:** The purpose of the intended research is to determine what type of consultation model is most effective in facilitating the implementation of the Pyramid Model within one preschool early childhood setting. Expected duration of the study is four months (January 2013-April 2013).

### **Procedures:**

- The goal of this consultation is to help the system function independently without the consistent use of a researcher or outside consultant. It is the goal of this study to find the most beneficial way to help the program work independently without imposing on the everyday workings of the Center.
- This researcher proposes that providing a regular meeting time for teachers to interact with their assistant teachers to discuss program implementation will help to not only sustain the program, but also improve it without the use of an outside consultant.
- To make that interaction possible, lead teachers will be required to meet with their assistant teachers once per week for a time period of at least one half hour. A time period will be established within the system and teachers will not be responsible for specifying the time or providing any substitutes needed. It should be further explained that for some teachers this may mean giving up your plan time once per week. This will be avoided if at all possible.
- Use of the "Inventory of Practices" will be done to help dyads determine areas in which they would like to concentrate. Teacher dyads will be asked to pick one concept area to pay particular attention to throughout the week and will then talk about that concept at their meeting at the end of the week.
- At the meeting teacher dyads will be expected to complete a short form about the area they had chosen. Each teacher will be required to sign the form and provide a copy to the researcher.
- Observation of the implementation of the program will be done over the course of the study with the Teaching Pyramid Observation Tool (TPOTS) and will be completed by the researcher and reliability partner. Video-taping of classroom implementation will be done as to not disturb the classroom with many observations.
- Teachers will not be given direct feedback on the TPOTS scores throughout the course of the study. They will have the opportunity to review all information pertinent to their classroom at the end of the study.

**Right to Decline:** Participants have the right to decline participation in the study and have the right to withdraw from the study even after the research has begun. There would be **no** consequence for withdrawing from the study and teachers **would not** be denied support as a result. Declining from the study would not impact their job in anyway.

**Possible harm or Inconvenience:** A consistent time commitment of at least one half hour per week will be expected of research participants. Research participants will also need to allow videotaping of their classrooms.

**Benefits of Participation and Research Benefits:** Benefits of participating in the study include the possibility of increased independence and better implementation of a preventative model of behavior intervention which also increases social skills. Teachers will receive professional development hours for each meeting time that includes the researcher. Ultimately, this research could lead to better outcomes for children and increased support for teachers. Research benefits would include identification of one possible procedure for providing support to teachers which would benefit children as well. This could lead to more effective consultation that functions in applied settings. It also completes a doctoral dissertation requirement for the researcher.

**Confidentiality:** Confidentiality will be observed and teacher names as well as the program name will not be reported in the study. Information about children will not be reported in the study with the exception of the number of students per classroom. Teachers will be referred to by a number within the study. With permission, the researcher will publish within the dissertation the level of education of the teacher, the number of years they have been teaching in the classroom, and the number of students in their classroom.

If you have questions about this study or would like to learn more about your rights as a participant please feel free to contact the researcher at [mvaughn@cdcenters.org](mailto:mvaughn@cdcenters.org) or 814- 577-8630 and/or my research advisor Dr. Mark Fugate at [ffugate@alfred.edu](mailto:ffugate@alfred.edu). Thank you for your consideration.

Participant Consent (Please check one box and sign):

☐ I consent to participate in the research study outlined above. I understand that I am not required to participate in the study and that my participation is completely voluntary. I consent to having my level of education, number of years teaching, and number of children in my classroom published without identification of my name. I agree to meet with my assistant teacher once per week to discuss implementation of the Pyramid Model. I consent to being video-taped in order for researchers to complete more frequent TPOTS observations.

☐ I do not wish to participate in the research study.

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Signature of Participant

---

Date

## Appendix C

### *Informed Parent Consent*

#### To Whom It May Concern:

As you know, our Center has will be participating in implementation of a positive behavior support model. Currently, research is being conducted by our school psychologist and Alfred University to help the center better implement the model. The research requires that classrooms be video-taped once per week to monitor teacher implementation of the behavior program. As a result, your child could be caught on video camera as they participate in their normal interaction at the center. Your child and information about your child will not be part of the research with the exception of the number of students in each classroom. Focus of the study is on teacher implementation and not on child behavior. Therefore, no information about your child will be recorded or reported in the study. Also, the tapes will not be viewed by anyone outside of the CDC staff. If you have concerns surrounding this research and the possibility of your child being video-taped, please contact the center for more information.

Thank you

## Appendix D

### *Agreement for the Teaching Pyramid Observation Tool*

The authors of the Teaching Pyramid Observation Tool – Research Edition (TPOT) provide limited permission to \_\_\_\_\_ for the use of the observation instrument for research or program evaluation. Below are the conditions for granting permission:.

1. The TPOT is a teacher observation tool that is currently under development. The research version of the TPOT will be subject to revisions based upon the findings of research that is currently underway by the developers.
2. Permission to use the TPOT does not include permission to modify the instrument.
3. The Users of the TPOT agree to provide the developers a description of the research or program evaluation project including study/program goals, procedures, and other measures that will be used with the TPOT.
4. The Users of the TPOT agree to provide the developers with information and summary data that is gained from the use of the TPOT.
5. The Users of the TPOT agree to provide the developers the opportunity to review manuscripts or research summaries related to the use of the TPOT prior to publication.
6. The Users of the TPOT agree to provide the developers with data on the use of the TPOT prior to public presentations.

I agree to the conditions stated in this document:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
City/State

## Appendix E

### *Teacher Meeting Form*

Names of teachers:

Meeting date:

Time:

Section reviewed the week before:

Section of Inventory of Practices discussed for the next week:

Areas of strength:

Areas to work on:

Ways to help solve the  
problem: \_\_\_\_\_

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Plan for after the  
Meeting (who will follow through with the  
plan?): \_\_\_\_\_

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Lead Teacher Signature: \_\_\_\_\_

Assistant Teacher Signature: \_\_\_\_\_



## Appendix F

### *Standard Training Protocol*

#### Introduction and Theory behind Peer Coaching

**Consultant:** Thank you for agreeing to participate in the study. The goal is to provide opportunities for each of you to plan and continue implementing the program in the future even when consultation is not as readily available. Research suggests that one way to help a program sustain without an outside consultant is to use peer coaching. This is the model we will be trying over the next 18 weeks. If it is successful, perhaps the center will consider keeping the model.

*The consultant will then quickly go over the hand-outs on the next page entitled, “What is Peer Coaching” and “What will Our Peer Coaching Model Include?”*

**Consultant:** To make the Inventory of Practices easier to use, each section has been laminated and turned into a card. The lead and assistant teacher will each get a copy of the card in the area they choose to work on that week.

*Show the teachers an example card. Use the card labeled, “Building Positive Relationships-1.”*

**Consultant:** Each teacher will make notes about their implementation of each step throughout the week. When the teacher dyads meet at the end of the week they will determine how

consistently they implemented each step and discuss which components need improvement and which ones are already in place.

*Show the teachers the “Teacher Meeting Form” in Appendix F. Explain that they will complete this form when they meet to help them plan for the following week and to help them determine the next area they would like to move onto. Explain that a copy of the completed form along with the completed card will need to be given to the researcher each week.*

**Consultant:** Explain that over the next two weeks the consultants will come to each classroom and help the teachers practice using their cards. Explain that the consultants will also participate in the weekly meetings for the next two weeks. Explain that after two weeks of practice the teachers will use the model on their own.

### **What is Peer Coaching?**

- Peer coaching models were designed to be primarily used between teachers in providing a forum for observation and coaching each other one-on-one in order to improve implementation of teaching practices (Gottesman, 2000).
- Peer coaches should be peers who are at the same level. Therefore, the coach should not be a supervisor. As a result, the teacher observing at that point in time is the coach. They are to switch roles on a regular basis. Therefore, one teacher is not considered to be the coach. All teachers who are part of the team are considered to be coaches and they become the coach as soon as they begin to observe (Joyce & Showers, 2002).
- For our center, it is easy to have peer coaching dyads because our lead and assistant teachers work together every day in a collaborative effort to do what is best for children.

### **Does it work?**

- Joyce and Showers (1983) examined the transfer of implementation from training to practice. They found that :
  - 5% of learners would use their new skill when only theory was used to teach the skill.
  - When theory and demonstration were used it was found that 10% of the participants put the skill into practice.
  - Practice in addition to theory and demonstration resulted in 20% implementation.
  - Feedback in addition to all other components resulted in 25% implementation.
  - When coaching was added to all other components implementation rose to 90%.
- Joyce and Showers conducted a study in 1984 which found that the peer coaches were just as effective in implementing program change as the use of an expert consultant.

### **What will our Peer Coaching Model Include?**

- The model will provide a regular meeting time for teachers to interact with their assistant teachers to discuss program implementation and will help to not only sustain the program, but also improve it without the use of an outside consultant.
- To make that interaction possible, lead teachers will be required to meet with their assistant teachers once per week for a time period of at least one half hour. A time period will be established within the system and teachers will not be responsible for specifying the time or providing any substitutes needed. It should be further explained that for some teachers this may mean giving up your plan time once per week. This will be avoided if at all possible.
- Use of the “Inventory of Practices” will be done to help dyads determine areas in which they would like to concentrate. Teacher dyads will be asked to pick one concept area to pay particular attention to throughout the week and will then talk about that concept at their meeting at the end of the week.
- At the meeting teacher dyads will be expected to complete a short form about the area they had chosen. Each teacher will be required to sign the form and provide a copy to the researcher.
- Observation of the implementation of the program will be done on a weekly basis with the Teaching Pyramid Observation Tool (TPOTS) and will be completed by coaches. Video-taping of classroom implementation will be done as to not disturb the classroom with many observations.

## Appendix G

### *Inventory of Practices*

#### **Two Chosen by Dyad One:**

#### Building Positive Relationships-

#### 1. Develops Meaningful Relationships with Children and Families

	Observations/Evidence	Target for Training?	1- Seldom	2- Occasionally	3- Consistently
Greets children on arrival; calls by name					
Communicates with children at eye level					
Verbally interacts with individual children during routines and activities					
Participates in children's play when appropriate					
Shows respect, consideration, warmth to all children					
Speaks calmly to children					
Uses a variety of strategies for building relationships with all children					
Attends to children in positive ways at times when children are not engaging in challenging behavior- gives specific positive praise					
Uses a variety of strategies for building relationships with all families					
Creates a classroom that is a place that children and families like to be (feel comfortable, welcome, and safe).					

Designing Supportive Environments  
1. Designs the physical environment

	Observations/Evidence	Target for Training?	1 - Seldom	2 - Occasionally	3 - Consistently
Arranges traffic patterns in classroom so there are no wide open spaces					
Removes obstacles that make it difficult for children with physical disabilities to move around the room					
Clearly defines boundaries in learning centers					
Designs learning centers so that children spend times evenly across centers					
Considers children's interests when deciding what to put in learning centers					
Makes changes and additions to learning centers on a regular basis					
Visually closes learning centers when they are not an option for children to use					

Designing Supportive Environments  
4. Ensures Smooth Transitions

Observations/Evidence	Target for Training?	1 - Seldom	2 - Occasionally	3 - Consistently
Structures transitions so children do not have to spend excessive time waiting with nothing to do				
Teaches children the expectations associated with transitions				
Provides warnings to children prior to transitions				
Individualizes the warnings prior to transitions so that all children understand them				

**Two chosen by Dyad Two:**

Individualized Intensive Interventions  
3. Develops and implements behavior support plan

	Observations/Event idene	Target for Training?	1- Seldom	2- Occasionally	3- Consistently
Includes replacement skills (new behaviors to replace inappropriate behaviors)					
Includes prevention strategies					
Includes new responses					



## Social and Emotional Teaching Strategies

### 3. Encourages Autonomy (independence)

Observations/Event Target for Training?	1- Seldom	2- Occasionally	3- Consistently
Provides children with opportunities to make choices			
Allows children time to respond and/or complete task independently before offering assistance			
Creates opportunities for decision making, problem solving, and working together			
Teaches children strategies for self-regulating and/or self-monitoring behaviors			